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**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 an engineering sector.

(a) Tick the **two** boxes below where the products belong to the fabrication sector.

Products	Tick <b>two</b> boxes below
Soft wood	
Lycra sportswear	
Door handles	
Cranberry juice	
Mountain bike frame	
Wool felt	

(2)

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

Products	Tick <b>two</b> boxes below
Credit card	
Laser jet printer	
Portable barbecue	
Cook-chill packaging	
Filing cabinets	
Curtains	

(2)

Q1

(Total 4 marks)



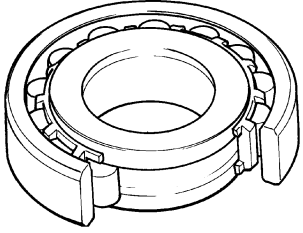
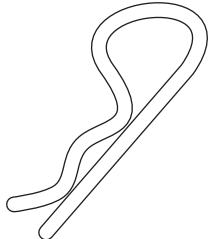
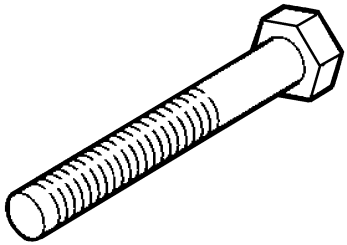
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2. The table below shows some components used in the manufacture of products.

Complete the table by:

- (a) naming each component;
- (b) explaining how each component is used.

The first one is done for you.

Component	Component Name	Use
	Bearing	Used to reduce friction between a rotating component and a stationary component.
		
		(3)
		
		(3)

(Total 6 marks)

Q2



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3. (a) Information and communications technology (ICT) is used in the design of products.

(i) Name **one** type of ICT that is used for sourcing information.

.....  
(1)

(ii) Name **one** type of ICT that is used for handling information.

.....  
(1)

(b) Systems and control technology is used in the manufacture of products.

Name **one** type of systems and control technology that is used to monitor production.

.....  
(1)

(c) Modern and smart materials are used in the manufacture of products.

(i) Name **one** smart material.

.....  
(1)

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

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

(Total 6 marks)

Q3



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4. A set of darts belongs to the engineering fabrication sector.

(a) (i) State **one** product from the engineering fabrication sector, apart from a set of darts, that uses a modern material and process control in its manufacture.

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(1)

(ii) Explain the purpose of the product.

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

(b) (i) State **one** modern material used in the manufacture of the product stated in 4(a)(i).

.....  
(1)

(ii) Explain how this modern material benefits the user of the product.

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

(c) (i) State **one** type of process control used in the manufacture of the product stated in 4(a)(i).

.....  
(1)

(ii) Explain **one** advantage to the manufacturer of using this type of process control.

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

(Total 9 marks)

Q4



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5. Computer-aided design and computer-aided manufacture (CAD/CAM) are used in the design and manufacture of fabricated products.

(a) (i) Describe **one** CAD modelling technique used in the design of fabricated products.

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

(2)

(ii) Explain why CAD modelling is an important industrial process.

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

(2)

(b) (i) Describe **one** use of CAM in the manufacture of fabricated products.

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

(2)

(ii) Explain **one** benefit to the consumer of the use of CAM in manufacture.

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.....  
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(2)

(Total 8 marks)

Q5



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6. In the engineering fabrication industry, communications technology is used to transfer information between suppliers, manufacturers and retailers of fabricated products.

(a) (i) State **one** way in which communications technology is used to transfer information between suppliers and manufacturers.

.....  
(1)

(ii) Describe **one** benefit to manufacturers of using communications technology to 'talk' to their suppliers.

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

(b) (i) Describe **one** way in which communications technology is used to transfer sales information from retailers of fabricated products to manufacturers.

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

(ii) Explain the benefits to retailers of fabricated products of using communications technology to 'talk' to manufacturers.

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(3)

(Total 8 marks)

Q6



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7. Computer-integrated manufacturing systems (CIM) are used in the manufacture of fabricated products.

(a) Describe **one** main feature of a CIM system.

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

(2)

(b) Describe **one** benefit to manufacturers of using CIM in the manufacture of fabricated products.

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(2)

(Total 4 marks)

Q7

**TOTAL FOR SECTION A: 45 MARKS**





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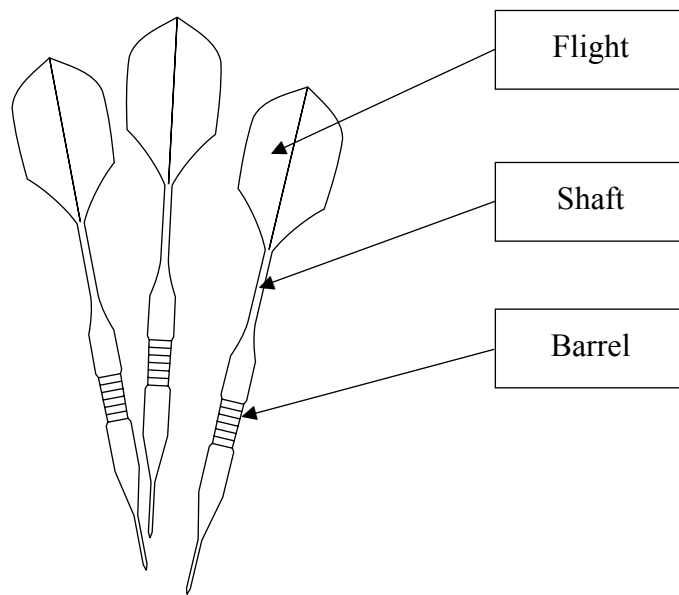


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**SECTION B**

**Answer ALL questions in Section B with reference to a mass produced set of darts suitable for the darts player.**

The diagram below shows a mass produced set of darts suitable for the darts player.



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8. In the boxes below, explain, using annotated diagrams:

(a) The function of the flight.

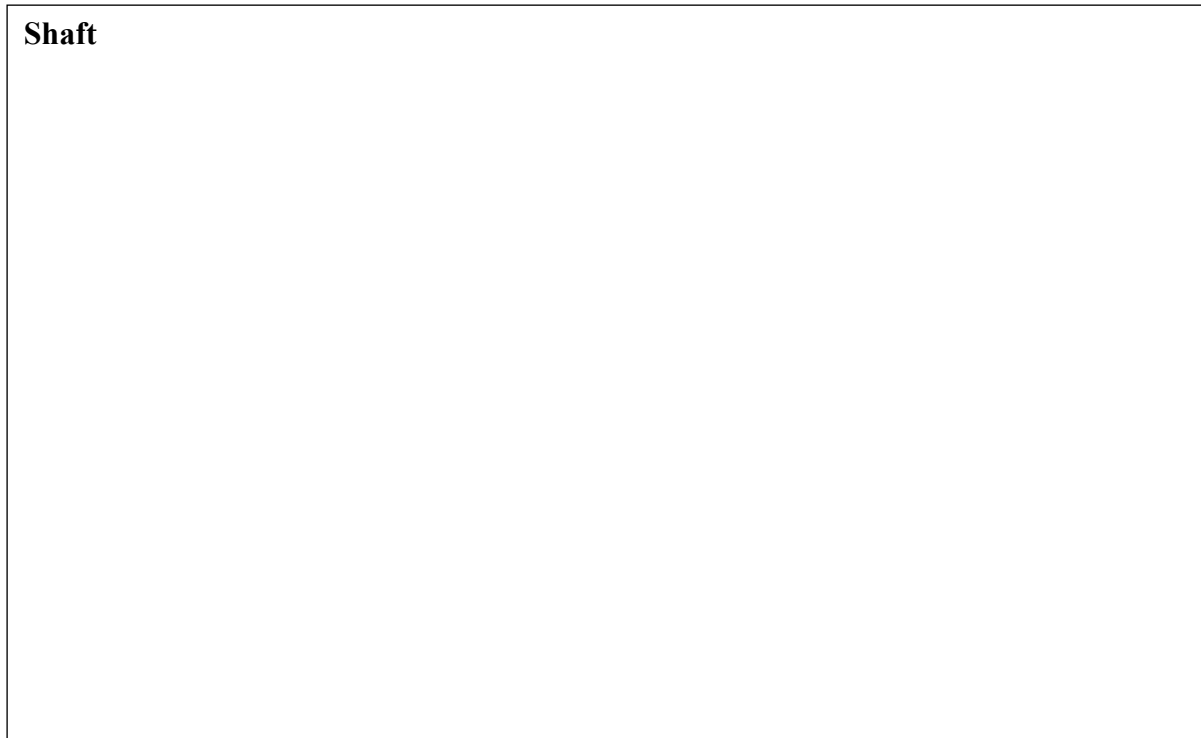
**Flight**



(3)

(b) The function of the shaft.

**Shaft**



(3)

(Total 6 marks)

Q8



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9. Mass produced sets of darts suitable for the darts player are produced using modern materials.

(a) (i) Name **one** modern alloy commonly used for the **barrel** of the dart.

.....  
(1)

(ii) Explain how this modern alloy has helped to improve the characteristics of the barrel of the dart.

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

(b) Coatings are often used in the manufacture of mass produced sets of darts suitable for the darts player.

(i) State **one** type of coating used in the manufacture of this type of dart barrel.

.....  
(1)

(ii) Describe **one** reason for the use of this coating.

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.....  
(2)

(c) Explain how the use of composite materials in the shaft of the dart has made this type of dart appeal to the darts player.

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(3)

(Total 9 marks)

Q9



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10. (a) Mass produced sets of darts suitable for the darts player are manufactured using a number of different stages.

Describe the following **four** main stages in the manufacture of the set of darts:

(i) Production planning.

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.....  
.....

(2)

(ii) Materials supply and control.

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.....  
.....

(2)

(iii) Production.

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.....  
.....

(2)

(iv) Assembly and finish.

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(2)

(b) Explain the advantages to the manufacturer of using ICT at the production planning stage of manufacturing the set of darts.

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(3)

(Total 11 marks)

Q10

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**11.** Control systems are used in the manufacture of mass produced sets of darts suitable for the darts player.

(a) (i) State **one** stage in the manufacture of the set of darts where quality should be checked.

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(1)

(ii) Describe how quality could be checked at this stage of manufacture.

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

(iii) Explain the benefits to the darts player of the use of quality control.

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

(b) (i) State **one** use of computer control at the production stage of manufacturing the set of darts.

.....  
(1)

(ii) Describe how computer control is used at the production stage.

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

(iii) Explain the benefits to the manufacturer of this use of computer control.

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(3)

**(Total 12 marks)**

**Q11**



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**12.** Information and communications technology (ICT) plays an important role in the manufacture of mass produced sets of darts suitable for the darts player.

(a) (i) State **one** use of ICT in the **marketing stage** of manufacturing the set of darts.

.....  
(1)

(ii) Explain the benefits to the **manufacturer** of this use of ICT.

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

(b) Describe **one** use of ICT in the **packaging and dispatch** stage of manufacturing the set of darts.

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

(c) Explain how the use of ICT has made this type of set of darts appeal to the darts player.

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

**(Total 7 marks)**

**Q12**



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**13.** A manufacturer of darts operates worldwide. Modern technologies including ICT are used in the design and manufacture of these sets of darts.

(a) Evaluate the advantages to this manufacturer of the use of ICT.

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**(5)**





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(b) Evaluate the impact of the use of modern technologies on the sustainable manufacture of the set of darts.

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(5)

Q13

(Total 10 marks)

**TOTAL FOR SECTION B: 55 MARKS**

**TOTAL FOR PAPER: 100 MARKS**

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