

Leave
blank

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 **engineering fabrication** sector.

Products	Tick two boxes below
High-visibility vest	
Flat screen TV	
Icing sugar	
Metal door lock	
Liquid soap	
Fire extinguisher	

(2)

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

Products	Tick two boxes below
Golf glove	
Whale oil	
Waste skip	
Road atlas	
Suspension bridge	
Brake disc	

(2)

Q1

(Total 4 marks)


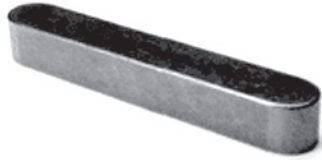


Leave blank

2. The tables below show some components used in the manufacture of products.

(a) Complete Table 1 by naming each component.

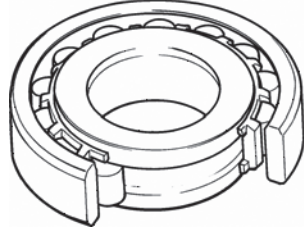
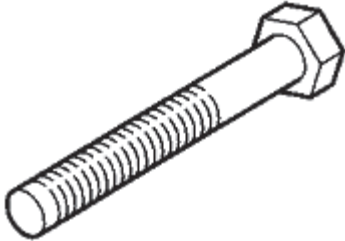
Table 1

Component	Component name	Use
		Used as a semi permanent or permanent fixing between two components/ sheets or plates.
		Fits in a machined slot on a shaft to hold another round component in place.

(2)

(b) Complete Table 2 by explaining the use of each component.

Table 2

Component	Component name	Use
	Bearing	
	Hexagonal headed bolt	

(4)

(Total 6 marks)

Q2



Leave blank

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

Continuous operation

(1)

Information and communications technology (ICT)

Computer-aided design (CAD)

(1)

Databases

(1)

Control technology

Polymers

(1)

Automation

(1)

Modern materials

Composites

(1)

Q3

(Total 6 marks)



Leave blank

4. Mechanics vices belong to the engineering fabrication sector.

(a) (i) Name **one** other product from this sector, apart from a mechanics vice, that utilises in its manufacture information and communication 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 design of the product.

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

(Total 9 marks)

Q4



Leave
blank

5. (a) Explain **three** benefits to a **manufacturer** of using computer-aided manufacture (CAM).

1

.....

2

.....

3

.....

(6)

(b) Explain how the use of CAM in product manufacture encourages the **consumer** to buy the product.

.....

.....

.....

(2)

Q5

(Total 8 marks)



Leave
blank

6. In the engineering fabrication industries, communications technology is used to transfer information between suppliers, manufacturers and distributors.

(a) (i) State **one** type of communications technology used to transfer information between suppliers and manufacturers.

.....
(1)

(ii) Describe how the use of this communications technology benefits the **manufacturer**.

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

(b) (i) Describe **one** way in which communications technology is used to transfer sales information from engineering fabrication product distributors to manufacturers.

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

(ii) Explain how the use of this communications technology benefits the **distributor**.

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

(Total 8 marks)

Q6



Leave
blank

7. (a) Explain **one** advantage, other than a financial benefit, of introducing automation to the production stage in engineering manufacture.

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

(2)

(b) Explain **one** disadvantage of introducing automation to the production stage in engineering manufacture.

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

(2)

(Total 4 marks)

Q7

TOTAL FOR SECTION A: 45 MARKS



BLANK PAGE

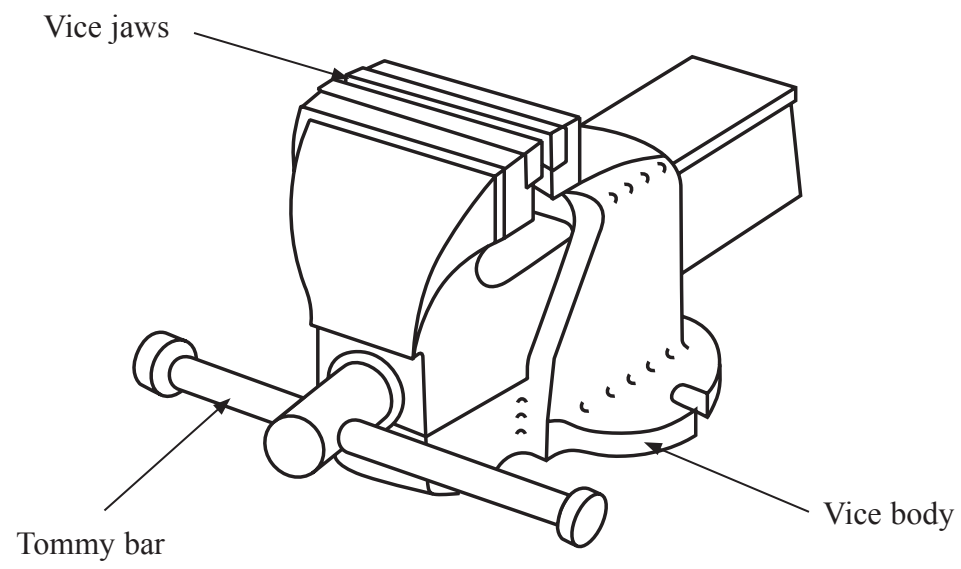
TURN OVER FOR SECTION B



SECTION B

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

The diagram below shows a mechanics vice.



Leave
blank

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

(a) the function of the tommy bar

Tommy bar

(3)

(b) the function of the vice jaws.

Vice jaws

(3)

Q8

(Total 6 marks)

11

Turn over



9. (a) The following table indicates some of the main stages in manufacturing mechanics vices.

(i) Complete the table below by giving the **two** missing stages in manufacturing mechanics vices.

Stages in manufacturing	
1	Design
2	
3	
4	Material supply and control
5	Production
6	Assembly and finishing
7	Packaging and dispatch

(2)

(ii) State the stage where the machining of the mainscrew would be carried out.

Stage

(1)

(b) Describe the following **two** stages in the manufacture of mechanics vices.

(i) Assembly and finishing

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

(3)

(ii) Packaging and dispatch

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

(3)

(Total 9 marks)

Q9



Leave blank

10. (a) Name the specific material commonly used in manufacturing each of the following parts of the mechanics vice:

(i) the mainscrew

.....
(1)

(ii) the vice body.

.....
(1)

(b) Sand casting is a production process and is used in the manufacture of mechanics vices.

(i) State **three** production processes, other than sand casting, used during the manufacture of mechanics vices.

1

2

3

(3)

(ii) Explain why sand casting is used.

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

(2)

(c) Explain how the use of modern materials has helped the **manufacturer** of mechanics vices to develop new products.

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

(3)

(Total 10 marks)

Q10

--	--



Leave blank

11. (a) (i) Give **one** application of quality control during the **production or assembly stage** of the manufacture of mechanics vices.

.....
(1)

(ii) Describe how quality could be checked in this application.

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

(iii) Explain the benefits to the mechanics vice user of the use of quality control.

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

(b) (i) Apart from quality control, state **one type** of computer control in the **production or assembly stage** of the manufacture of mechanics vices.

.....
(1)

(ii) Describe the use of this type of computer control.

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

(c) Explain the benefits to the **manufacturer** of the use of computer control.

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

(Total 12 marks)

Q11



Leave blank

12. Information and communications technology (ICT) plays an important role in the manufacture and sales of mechanics vices.

(a) (i) State **two** uses of ICT in the marketing stage.

1

2

(2)

(ii) Describe **one** use of ICT in the packaging and dispatch stage.

.....

.....

.....

(2)

(b) Explain **one** benefit of the use of ICT to the distributor of mechanics vices.

.....

.....

.....

(2)

(c) Explain the impact ICT has on the design, development and production of mechanics vices.

.....

.....

.....

.....

.....

.....

.....

.....

(4)

Q12

(Total 10 marks)

TURN OVER FOR QUESTION 13



Leave blank

13. Automation is often introduced within the manufacture of mechanics vices.

(a) Explain how the introduction of automation has impacted on product cost and the opportunity to introduce new product designs.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)

(b) Evaluate the effect of the use of automation on the workforce and the working environment.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)

Q13

(Total 8 marks)

TOTAL FOR SECTION B: 55 MARKS

TOTAL FOR PAPER: 100 MARKS

END

