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Centre Number

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Student Number

2001
HIGHER SCHOOL CERTIFICATE
EXAMINATION

Industrial Technology

Metals and Engineering Industries

General Instructions

- Reading time – 5 minutes
- Working time – 1½ hours
- Write using black or blue pen
- Draw diagrams using pencil
- Board-approved calculators may be used
- Write your Centre Number and Student Number at the top of this page and page 13

Total marks – 100

Section I Pages 2–10

60 marks

- Attempt Questions 1–3
- Allow about 55 minutes for this section

Section II Pages 13–19

40 marks

- Attempt Questions 4–5
- Allow about 35 minutes for this section

Question 1 (continued)

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(b) Outline how the expansion of the company could impact on its organisation and management. **2**

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(c) Describe TWO marketing features that would support the expansion of the company. **2**

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Question 1 continues on page 4

Question 1 (continued)

(d) Owing to increased sales, mass production and quality control techniques are investigated to meet the demand for the new products and to improve services to the consumer.

(i) What is mass production? Explain how the introduction of mass production could affect the profitability of the company. **4**

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(ii) Describe how quality control could be used to improve BOTH the products and the services provided to the consumer. **4**

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End of Question 1

Question 2 (20 marks)

The same company needs to improve its efficiency in order to expand.

- (a) List the implications for the company of purchasing new equipment to improve its efficiency. **2**

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- (b) The company has decided to multiskill its workforce.
 - (i) Outline how multiskilling could make this company more efficient. **2**

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- (ii) Describe personnel issues other than multiskilling that would directly influence efficient production. **4**

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Question 2 continues on page 6

Question 2 (continued)

- (c) Describe how computer software applications can be used to assist in the effective planning, development and management of production projects. **6**

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- (d) Discuss training methods that the company could use to ensure that staff are competent in their use of its software applications. **6**

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End of Question 2

Question 3 (20 marks)

- (a) Workplace injuries account for a large amount of lost production time.

In order to address this concern, a company from the metals and engineering industries has decided to display a number of safety signs throughout the workplace. A sample is shown.



- (i) What message does the safety sign convey? 1

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- (ii) Explain how the features of this sign add to its effectiveness in communicating the intended message. 3

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Question 3 continues on page 8

Question 3 (continued)

- (iii) Why is it important to carefully consider the placement of this safety sign in the workplace? **2**

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- (iv) Name strategies, other than signage, that this company could use to reduce workplace injuries. **2**

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Question 3 continues on page 9

Question 3 (continued)

- (b) (i) The company has decided to develop a safety manual containing both text and graphics. Outline the range of information-processing skills required to prepare and present this manual. Make reference to appropriate computer software in your answer.

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Question 3 continues on page 10

Question 3 (continued)

- (ii) The company has decided to produce 80 copies of the new safety manual. Each manual contains 15 pages. **3**

Complete the table, indicating the costs of producing these manuals.
All prices are inclusive of GST.

<i>Item</i>	<i>Unit cost</i>	<i>Total cost</i>
Artwork	\$200.00	\$200.00
Printing	50 cents per page	
Reams of paper	\$6.00 per ream (500 sheets)	
Binding for manual	\$4.00 per manual	

End of Question 3

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2001 HIGHER SCHOOL CERTIFICATE EXAMINATION

**Industrial Technology
Metals and Engineering Industries**

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Centre Number

Section II

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Student Number

40 marks

Attempt Questions 4–5

Allow about 35 minutes for this section

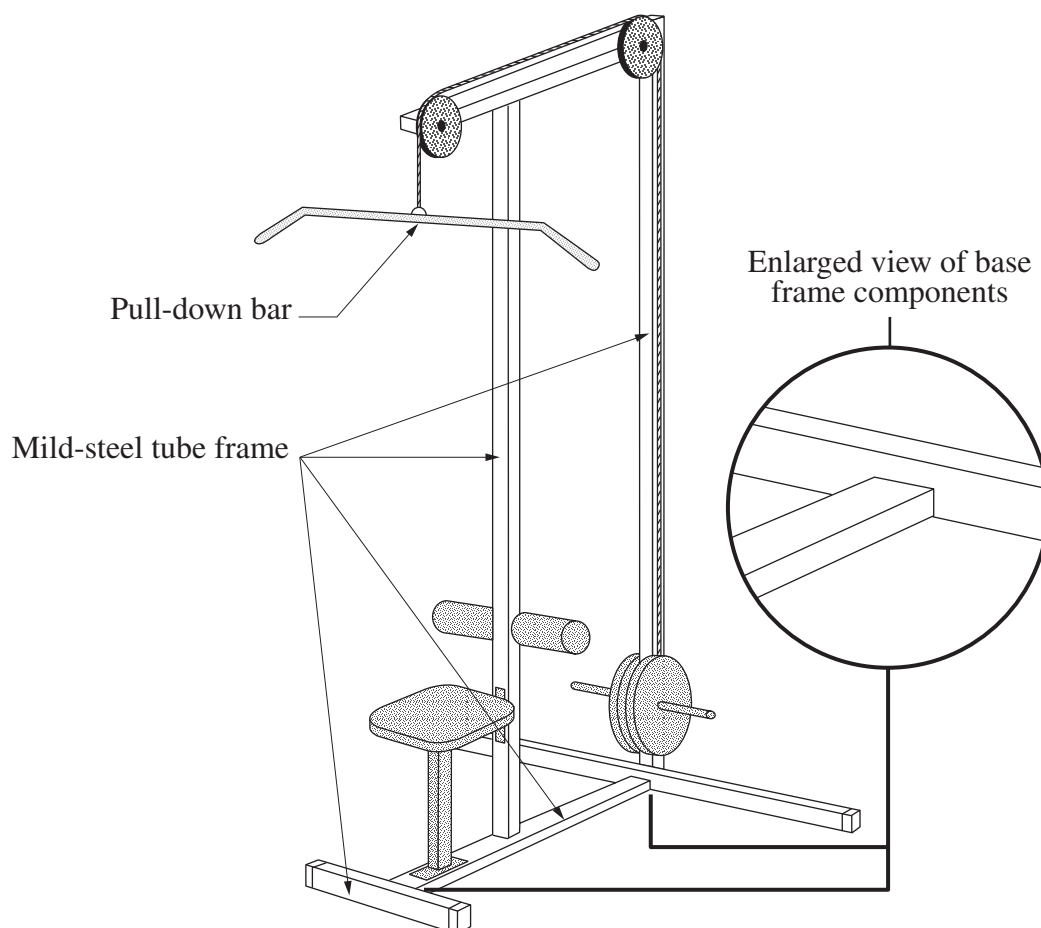
Answer the questions in the spaces provided.

Question 4 (20 marks)

Please turn over

Question 4 (20 marks)

- (a) A fitness machine is shown. The fitness machine is to be manufactured and sold as a self-assembly unit.



- (i) Mild-steel tube is used for the construction of the frame of the fitness machine. Identify TWO advantages of using this material. 2

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Question 4 continues on page 15

Question 4 (continued)

- (ii) Describe an industrial process used to manufacture the pull-down bar from round mild-steel bar. **2**

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- (iii) Explain a method of joining the base frame components of the fitness machine to ensure safety and ease of disassembly. **3**

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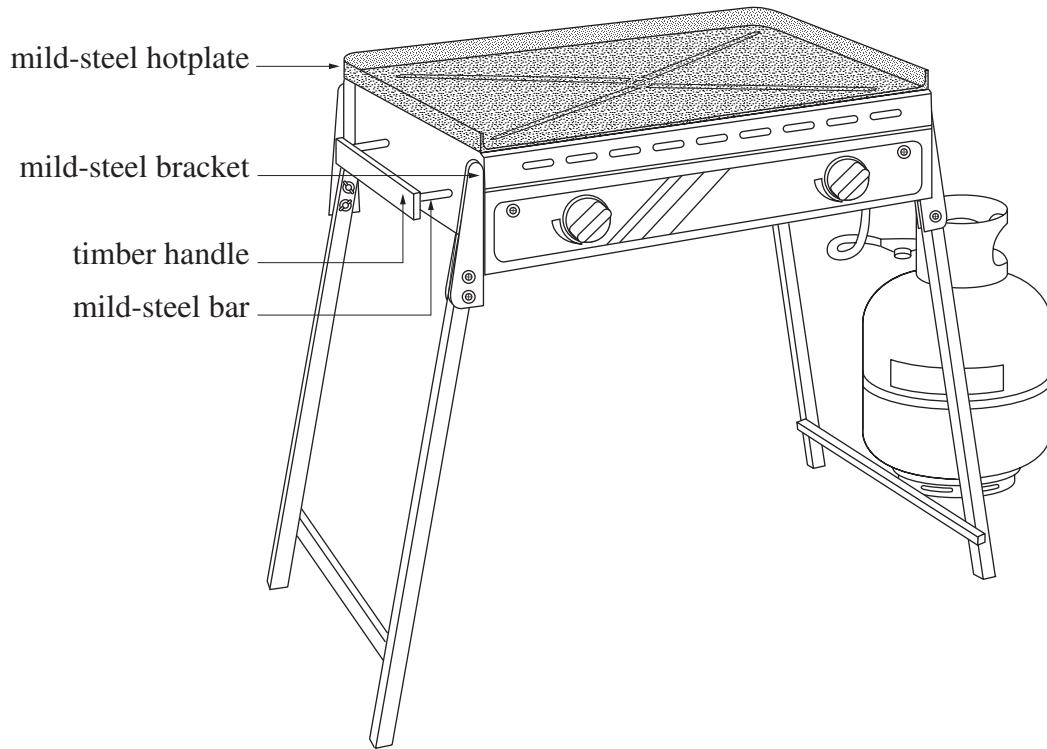
- (iv) Name and describe a suitable industrial finish that could be applied to the mild-steel frame components. Give a reason for your choice of finish. **4**

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Question 4 continues on page 16

Question 5 (20 marks)

A metals and engineering industries company has won a contract to manufacture barbecues for a major retail outlet. The barbecue is shown.



- (a) The legs of the barbecue are joined to the body using mild-steel brackets, nuts and bolts. Identify TWO reasons for the choice of these materials and components. 2

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- (b) Identify the industrial processes used to form the mild-steel hotplate. 2

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Question 5 continues on page 18

Question 5 (continued)

- (c) Name a material that could be used as an alternative for the barbecue hotplate. 4
Explain the properties and characteristics that would make it a suitable material for a hotplate.

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- (d) The handle of the barbecue is manufactured from timber and round mild-steel bar. Using labelled sketches show how the handle could be assembled and attached to the barbecue body. Justify your method. 3

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Question 5 continues on page 19

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