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Centre Number

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Student Number

2001
HIGHER SCHOOL CERTIFICATE
EXAMINATION

Industrial Technology

Plastics Industries

General Instructions

- Reading time – 5 minutes
- Working time – $1\frac{1}{2}$ 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

Section I

60 marks

Attempt Questions 1–3

Allow about 55 minutes for this section

Answer the questions in the spaces provided.

Marks

Use this information to answer Questions 1 and 2.

A company from the plastics industries needs to expand its operations extensively because of increased sales, improved marketing and the introduction of new products.

Question 1 (20 marks)

- (a) Prior to the introduction of new products, the company had limited production capacity. New technologies were examined to overcome this problem.

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Identify and describe a new technology related to this industry. Explain how this technology could improve the production capacity of the company.

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Question 1 continues on page 3

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 plastics 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. **9**

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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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Industrial Technology
Plastics Industries

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Centre Number

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Student Number

Section II

40 marks

Attempt Questions 4–5

Allow about 35 minutes for this section

Answer the questions in the spaces provided.

Marks

Question 4 (20 marks)

(a) Identify the tools shown.

2



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(b) Describe THREE appropriate safety precautions that should be taken when cutting and shaping polymer sheet.

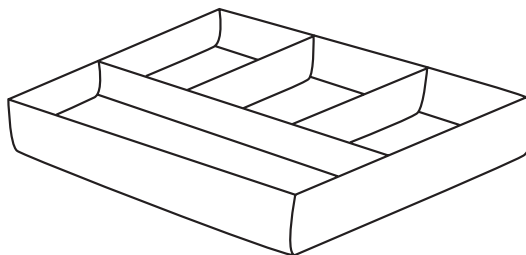
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Question 4 continues on page 14

Question 4 (continued)

- (c) A small desk-tidy tray similar to the one shown is to be made from coloured polymer sheet.



- (i) Select a suitable polymer for this task, and describe the process of fabricating the tray. 4

Polymer

Process

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Question 4 continues on page 15

Question 4 (continued)

- (ii) Describe the steps in applying a suitable quality edge finish to the tray. **3**

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Question 4 continues on page 16

Question 4 (continued)

- (d) The door liner for a refrigerator is to be produced by vacuum forming. **8**

Describe the vacuum forming process using labelled sketches where necessary. Indicate the quality-control measures that must be in place during the production of the door liner.

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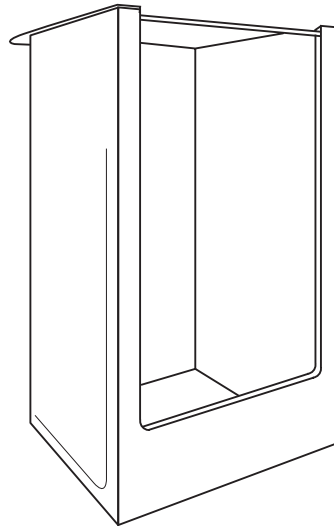
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Question 5 (20 marks)

A view of a shower enclosure manufactured from glass-reinforced plastic (GRP) is shown.



- (a) List TWO properties of GRP that make it suitable for the manufacture of the shower enclosure. 2

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- (b) Explain the process required to construct the shower enclosure in GRP using hand lay-up techniques. 3

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Question 5 continues on page 18

Question 5 (continued)

- (c) When in use, the wall of the shower enclosure was damaged.

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Describe a method that could be used to repair the crack. Your description should include the preparation of the surface, materials and solvent used and the repair process.

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Question 5 continues on page 19

Question 5 (continued)

- (d) Identify and discuss the environmental and OH&S controls that should be in place before the manufacturing of the shower enclosure begins. **9**

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