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Centre Number

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Student Number

2007
HIGHER SCHOOL CERTIFICATE
EXAMINATION

Industrial Technology

Electronics 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 pages 5, 9, 13 and 17

Total marks – 100

Section I Pages 2–12

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 the following information to answer Questions 1, 2 and 3.

IND-TECH is a company in the electronics industry. The company has been awarded a major contract. To meet increased production requirements, the company needs to review its current facilities and practices.

Question 1 (20 marks)

- (a) Outline a method of maintaining quality control during increased production. **2**

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- (b) Identify strategies that the company could use to obtain information for the review of its current facilities and practices. **3**

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Question 1 continues on page 3

Question 1 (continued)

- (c) (i) Define the term *automation*. **1**

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- (ii) Explain how automation can be used to improve the efficiency of production practices. **3**

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- (d) Discuss how increased production could impact on the organisation and management of the company. **4**

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Question 1 continues on page 4

Question 1 (continued)

- (e) IND-TECH is to investigate using other specialist organisations to supply some components for their products.

7

Discuss the advantages and disadvantages of using other organisations in the production process.

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End of Question 1

Industrial Technology
Electronics Industries

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Centre Number

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Student Number

Section I (continued)

Marks

Question 2 (20 marks)

- (a) Identify strategies that could be used to minimise waste from the increased production at IND-TECH. **2**

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- (b) What is meant by the term *workplace culture*? Outline a strategy that IND-TECH could use to enhance workplace culture. **3**

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Question 2 continues on page 6

Question 2 (continued)

- (c) Discuss using examples, the impact of government legislation on employees. **4**

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- (d) Evaluate the role of computer technology in training employees. **4**

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Question 2 continues on page 7

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Centre Number

Section I (continued)

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Student Number

Marks

Question 3 (20 marks)

IND-TECH'S production targets for a 6-month period are shown.

<i>Month</i>	<i>Units</i>
January	1000
February	1500
March	1900
April	1800
May	2000
June	2300

(a) Outline reasons for producing production targets.

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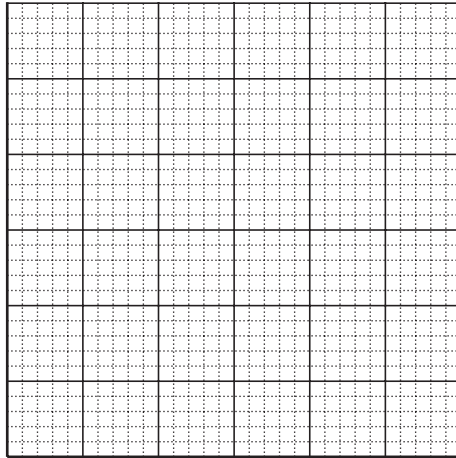
Question 3 continues on page 10

Question 3 (continued)

(b) Draw a graph on the grid to represent IND-TECH's production targets.

3

Units

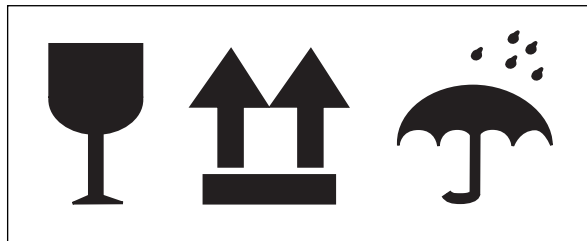


Months

(c) The symbols shown are examples of signage commonly used on packaging.

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Discuss the purpose of placing graphical images on packaging.



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Question 3 continues on page 11

Question 3 (continued)

- (d) The company is required to package 10 500 units for distribution.

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Complete the table indicating the cost of packaging these units. All prices are inclusive of GST.

<i>Item</i>	<i>Cost</i>	<i>Total cost</i>
Artwork	\$2100	\$2100
Materials	70c per unit	
Printing	35c per unit	
Labour	\$75 per 100 units	
	Total cost of packaging	
	Cost per unit	

Question 3 continues on page 12

Question 3 (continued)

- (e) Outline and assess the use of computer-developed techniques and hand-drawn techniques in the development of packaging artwork.

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End of Question 3

Industrial Technology
Electronics 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) How is resistance shown on a resistor?

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(b) Outline the importance of using truth tables in the design of logic circuits.

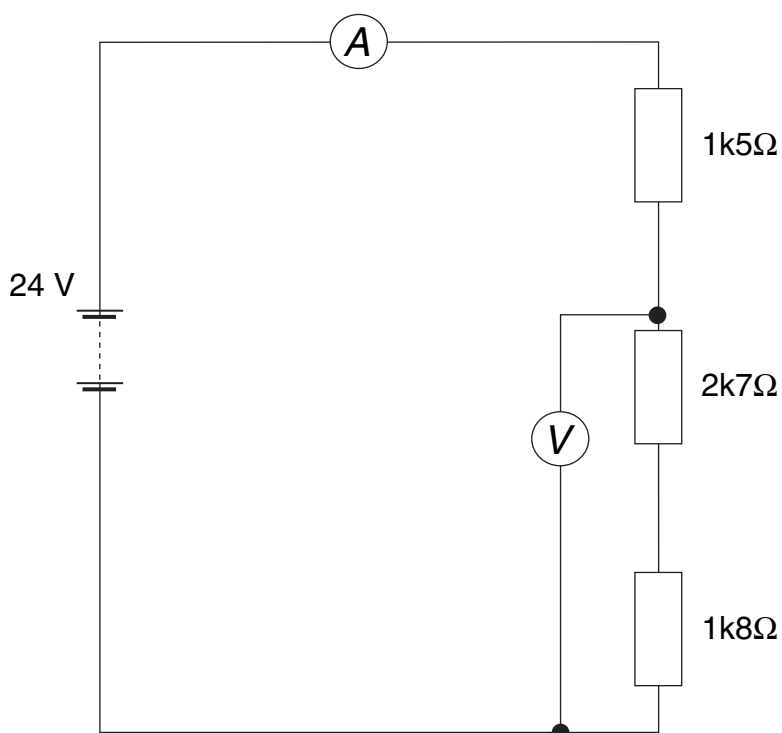
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Question 4 continues on page 14

Question 4 (continued)

(c) Use the circuit diagram to answer parts (i) and (ii).



(i) Calculate the current in the circuit at meter A. 2

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(ii) Calculate the voltage at meter V. 2

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Question 4 continues on page 15

Question 4 (continued)

- (d) With the aid of sketches, describe the difference between alternating current (AC) and direct current (DC). **4**

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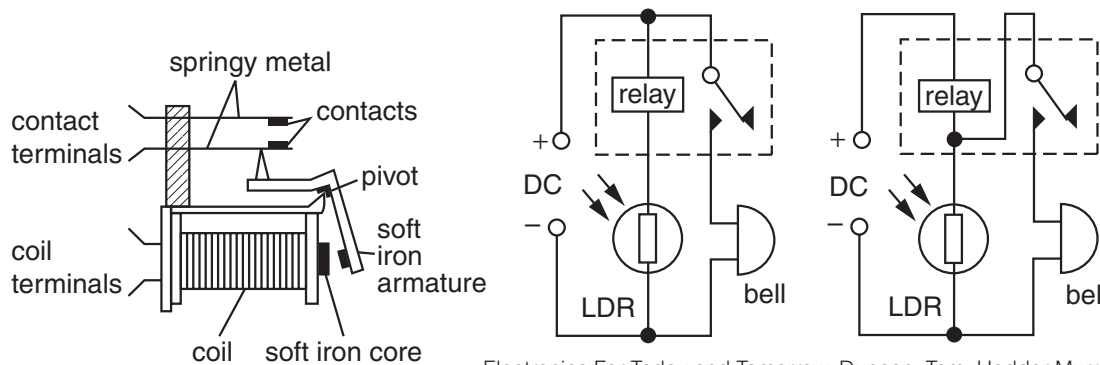
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Question 4 continues on page 16

Question 4 (continued)

- (e) The illustration shows the parts of a relay, and the placement of the relay in two different alarm circuits. 7



Electronics For Today and Tomorrow, Duncan, Tom, Hodder Murray, 1997, Reproduced by permission of John Murray (Publishers) Ltd

Describe how the relay operates and explain the difference in function of the two circuits.

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End of Question 4

Industrial Technology
Electronics Industries

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Centre Number

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Student Number

Section II (continued)

Marks

Question 5 (20 marks)

- (a) Give examples of where UHF transmitters/receivers are used. **2**

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- (b) Describe how a *movement switch* operates. Outline an appropriate application for its use. **3**

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Question 5 continues on page 18

Question 5 (continued)

- (c) Describe how a variable resistor works, and outline applications of its use. **4**

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- (d) Describe the *piezoelectric effect* within a piezo device. **4**

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Question 5 continues on page 19

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