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Centre Number

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Student Number

2005
HIGHER SCHOOL CERTIFICATE
EXAMINATION

Industrial Technology

Automotive 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 13–20

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

IND-TECH is a company in the automotive industry. The introduction of improved marketing strategies has increased demand for IND-TECH's products. Management is aware that a planned restructure and expansion program will impact on IND-TECH's production.

Question 1 (20 marks)

- (a) Greater demand for IND-TECH's products can be met through increased production. **2**

Identify TWO ways in which increased production can be achieved.

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- (b) Identify a marketing strategy, and outline how this strategy could increase the demand for a product. **3**

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Question 1 continues on page 3

Question 1 (continued)

- (c) Define the term *quality control*. Explain how quality control can be used to improve IND-TECH's products. **4**

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- (d) IND-TECH's management is planning to restructure its workforce. **4**

Discuss how management will ensure stable industrial relations during this operation.

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Question 1 continues on page 4

- 7

[illegible]

- 4 -

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Automotive Industries

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Student Number

Section I (continued)**Marks****Question 2** (20 marks)

- (a) List TWO advantages of
- multiskilling*
- in industry.

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- (b) Explain an effect that specialisation could have on production and on the workforce.

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Question 2 continues on page 6

Question 2 (continued)

- (c) Explain the term *sustainable development*, and recommend ways in which IND-TECH might make its operation more sustainable. **4**

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- (d) Discuss the influence of occupational health and safety (OHS) legislation on production. **4**

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Question 2 continues on page 7

- Identify and discuss issues that could be covered in this statement.

This image shows a full page of a worksheet designed for handwriting practice. It consists of approximately 20 evenly spaced horizontal dotted lines across the entire page, providing a guide for letter height and placement. The background is plain white, and there are no other markings or text present.

- 7 -

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Section I (continued)

Student Number

Marks

Question 3 (20 marks)

- (a) Outline the purpose of a materials list in the planning or the production process. **2**

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- (b) Explain why shapes and colours are used in safety symbols. Use an example to support your answer. **3**

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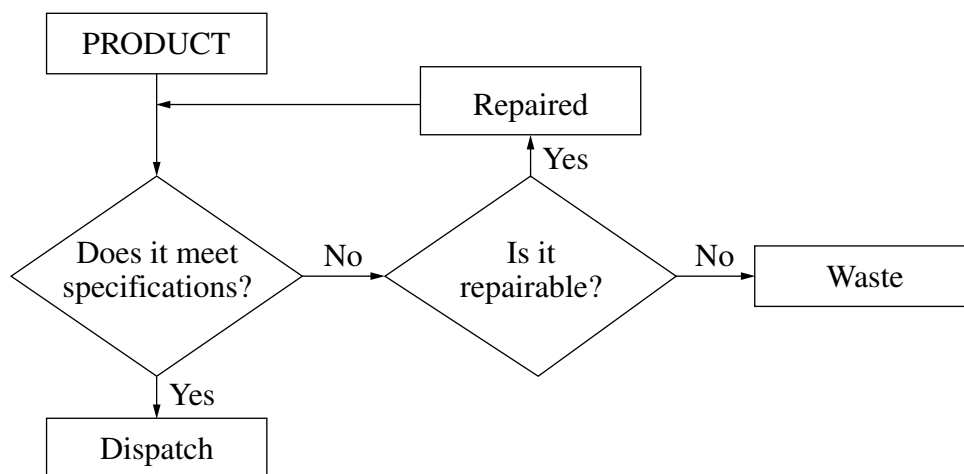
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Question 3 continues on page 10

Question 3 (continued)

(c) The diagram shows a process within a production system.

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Identify the type of diagram used. Explain why this type of diagram is suitable for representing the steps outlined in this production system.

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Question 3 continues on page 11

Question 3 (continued)

- (d) Outline the importance of function and aesthetics in the design of a product. **4**

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Question 3 continues on page 12

- Outline the processes the consultant would follow when:

- collecting and analysing information
- identifying the problems
- recommending possible outcomes
- preparing a draft report, and
- presenting the findings.

[illegible]

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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) List TWO disadvantages of electrically powered commuter vehicles. **2**

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- (b) Explain why hybrid (petrol/electric) vehicles are increasing in popularity. **3**

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Question 4 continues on page 14

Question 4 (continued)

- (c) Explain how solar energy is used to power a solar vehicle. **4**

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- (d) Outline the advantages of a two-stroke engine compared to a four-stroke engine of similar capacity. **4**

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Question 4 continues on page 15

- [illegible]

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Student Number

Section II (continued)

Marks

Question 5 (20 marks)

- (a) Why are *gas-filled* shock absorbers used on motor vehicles? 2

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- (b) A drawing of a strut suspension system used on modern front-wheel-drive vehicles is shown. 3



Name and describe a function of items *A* and *B*.

Item *A*

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Item *B*

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Question 5 continues on page 18

Question 5 (continued)

- (c) Following a serious accident, a motor repairer suspects that a vehicle body is twisted and out of alignment. **4**

Explain the procedure that the motor repairer should follow to assess the degree of twisting and misalignment.

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Question 5 continues on page 19

Question 5 (continued)

Use the picture to answer parts (d) and (e).



- (d) Minor damage has occurred to the mudguard on a small car, as shown.

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Explain, with the aid of labelled sketches, a suitable repair procedure, excluding preparation and painting, for this mudguard. Indicate the tools to be used at each step of the procedure.

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Question 5 continues on page 20

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[illegible]

– 20 –