

**B O A R D O F S T U D I E S**  
NEW SOUTH WALES

**2004**

HIGHER SCHOOL CERTIFICATE  
EXAMINATION

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Centre Number

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Student Number

# Industrial Technology

## Timber Products and Furniture 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.

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**Marks**

IND-TECH is a company in the timber products and furniture industry employing a mix of male and female employees. Management has decided to investigate the viability of introducing new technologies to stimulate productivity and expansion in the market.

**Question 1 (20 marks)**

(a) Identify an example of a new technology that IND-TECH could investigate. **1**

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(b) Outline the implications of the introduction of new technologies on IND-TECH’s existing technologies. **3**

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**Question 1 continues on page 3**

Question 1 (continued)

- (c) Describe ways in which IND-TECH’s management could evaluate the viability of introducing new technologies. **4**

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- (d) Explain how the introduction of new technologies could stimulate IND-TECH’s productivity. **4**

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**Question 1 continues on page 4**

Question 1 (continued)

- (e) Propose and justify ways in which IND-TECH could measure the efficiency of new technologies after they have been introduced. **8**

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**End of Question 1**

**Industrial Technology  
Timber Products and Furniture  
Industries**

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Student Number

**Section I (continued)**

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**Marks**

**Question 2 (20 marks)**

- (a) Identify sources of finance that IND-TECH may use to support the introduction of the new technologies. **2**

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- (b) Outline possible changes to the production manager’s responsibilities when new technologies are introduced. **2**

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**Question 2 continues on page 6**

Question 2 (continued)

- (c) The introduction of new technologies may enhance IND-TECH’s position in the product market. 4

Discuss how the introduction of new technologies could improve the marketability of IND-TECH’s products.

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- (d) As a result of the introduction of new technologies, a number of IND-TECH’s employees are identified as being redundant and are to be dismissed. 4

Outline the industrial rights of these employees, and identify appropriate action that can be taken by them.

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**Question 2 continues on page 7**

Question 2 (continued)

- (e) IND-TECH’s management proposes to retrain their female employees to be specialist users of the new technologies. **8**

Analyse this proposal and discuss the responsibilities of IND-TECH’s management towards all its employees.

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**End of Question 2**

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Section I (continued)

Question 3 (20 marks)

Marks

- (a) Identify the sign shown and state how IND-TECH's employees should respond to it. 2



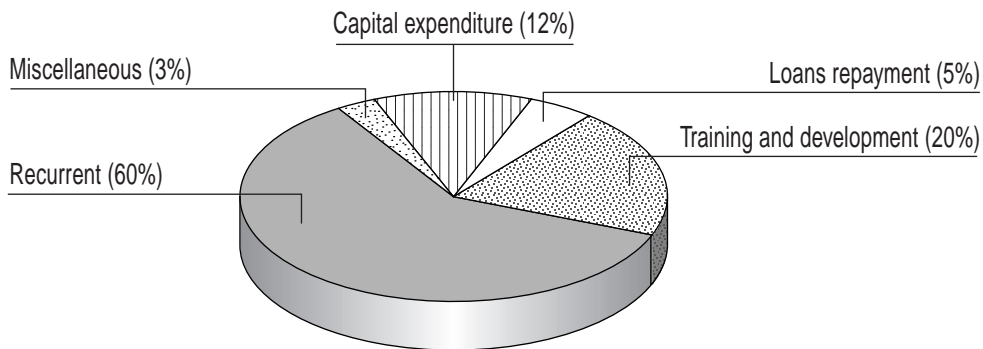
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- (b) The graph shows IND-TECH's expenditure in the year following the introduction of the new technologies. 2



Identify reasons for the proportion being spent on training and development.

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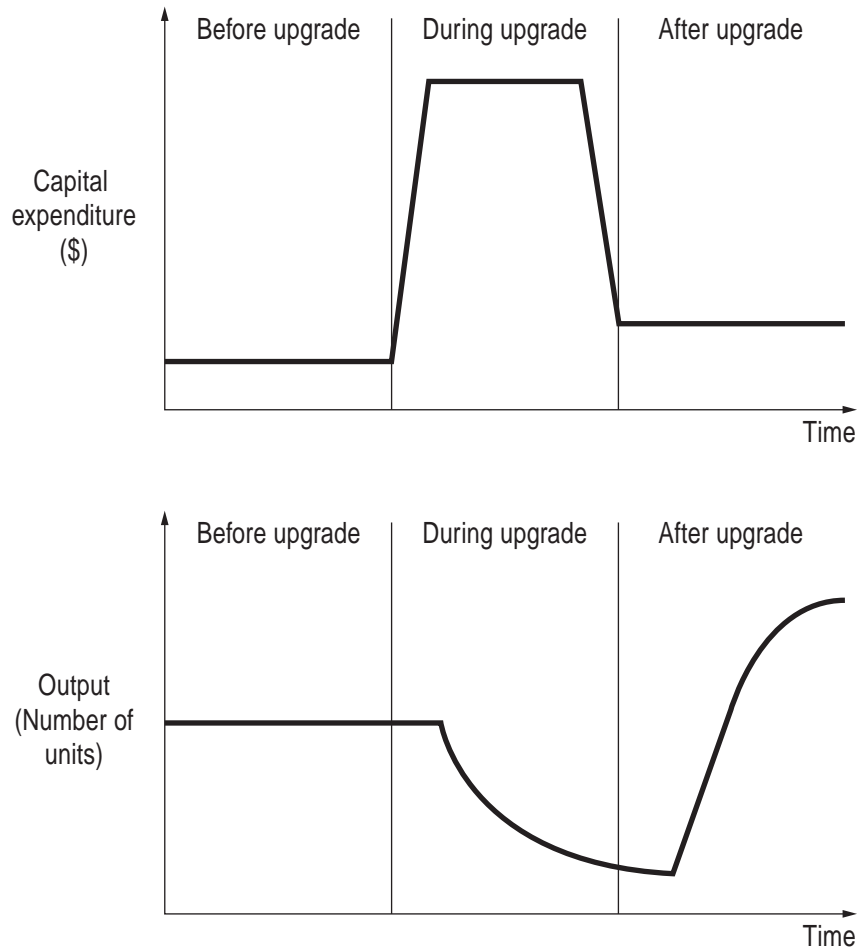
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Question 3 continues on page 10

Question 3 (continued)

- (c) The graphs below illustrate IND-TECH's capital expenditure and output before, during and after the introduction of new technologies. 4



Explain the reasons for the changes in capital expenditure and output during and after the upgrade phases.

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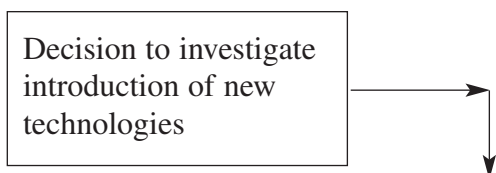
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Question 3 continues on page 11

Question 3 (continued)

- (d) Complete the diagram to show a sequence plan for the introduction of the new technologies at IND-TECH. **4**

**Introduction of new technologies plan**



**Question 3 continues on page 12**



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## Section II

40 marks

Attempt Questions 4–5

Allow about 35 minutes for this section

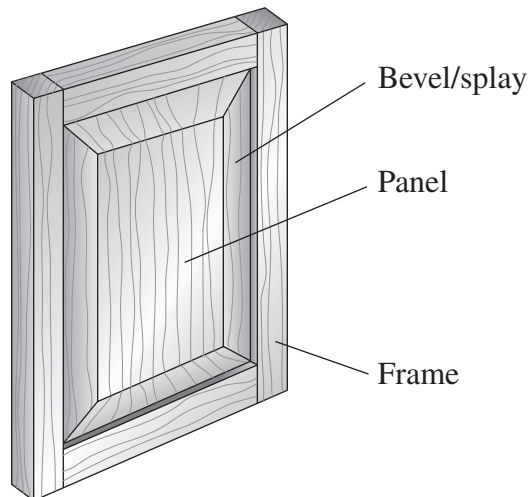
Answer the questions in the spaces provided.

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**Marks**

### Question 4 (20 marks)

The door shown is a sample from a range of doors that IND-TECH is producing for a manufacturer of wall units. The doors are made from Australian hardwood and consist of a timber frame and a solid timber panel.



- (a) (i) Select an Australian hardwood that could be suitable for the manufacture of the door. **1**

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- (ii) Identify the characteristics of an Australian hardwood that make it suitable for the manufacture of the door. **2**

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**Question 4 continues on page 14**

Question 4 (continued)

- (b) Identify a process that could be used to produce the bevel/splay on the panel. **1**

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- (c) When manufacturing the panel, the production manager has the option of joining together three pieces of timber  $70 \times 12$  or using a piece of timber  $210 \times 12$  for the panel. **4**

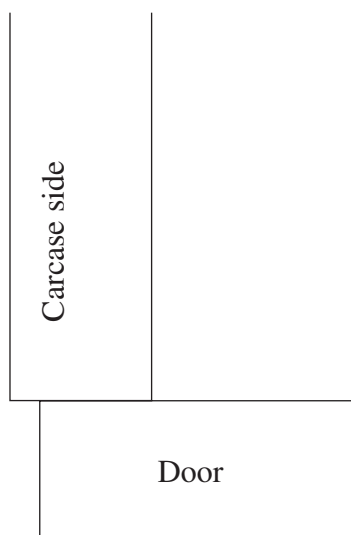
Select the method you would use, and outline the advantages and disadvantages of using this method.

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**Question 4 continues on page 15**

Question 4 (continued)

- (d) A door of the wall unit is positioned on the carcass as shown in the sketch. Name a suitable hinge (apart from a piano hinge) for this purpose, and indicate, by means of sketches, how the hinge is to be fitted. **4**



Name of hinge: .....

**Question 4 continues on page 16**





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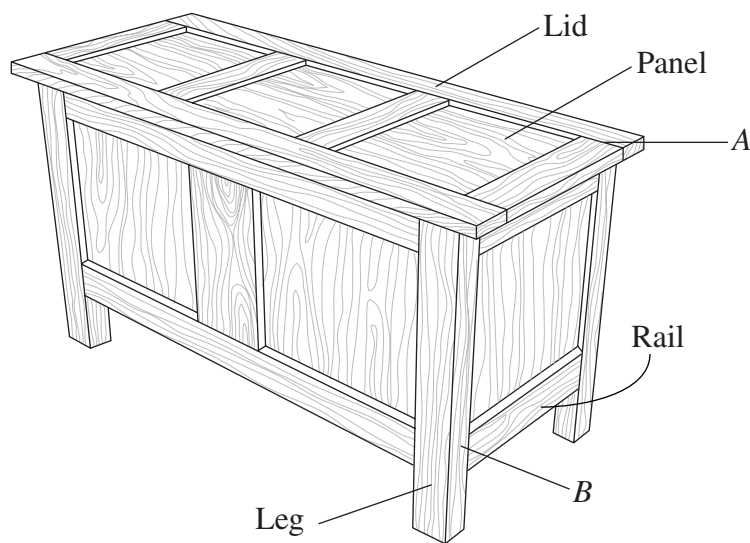
Student Number

Section II (continued)

Marks

Question 5 (20 marks)

The storage chest shown is manufactured by a local craftsman for a specialised market.



- (a) Identify TWO different joints that could be used to join the rails to the leg at *B*. State an advantage of each method. 2

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Question 5 continues on page 18

Question 5 (continued)

- (b) Select and justify an appropriate adhesive that could be used to secure the joints used in the chest. 2

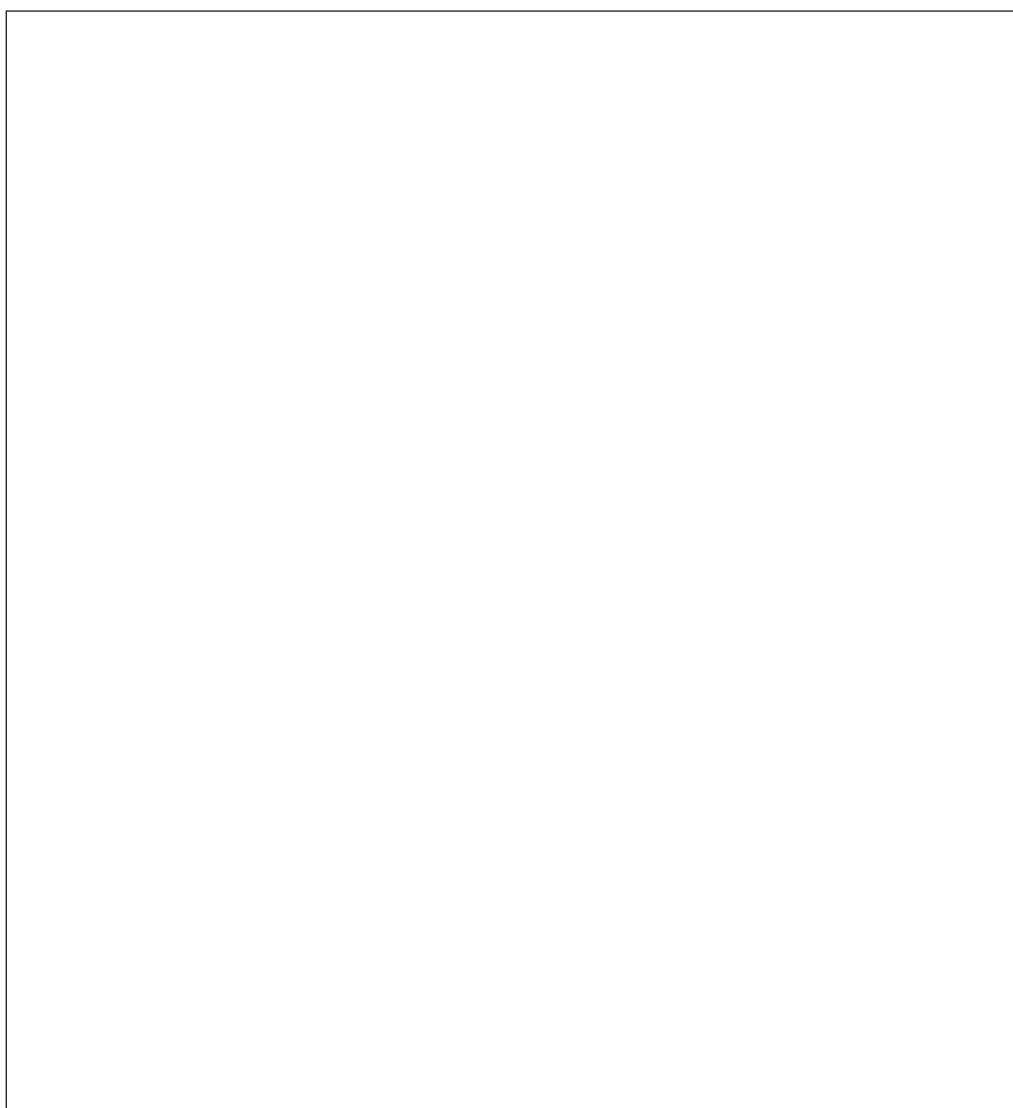
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- (c) The lid of the chest shown on page 17 is made using a frame construction. Sketch an exploded view of a suitable joint for corner A. On your sketch, indicate how the timber panel would be fitted into the frame. 4



Question 5 continues on page 19

Question 5 (continued)

- (d) The production and appearance of the chest can be affected by the selection of the timber. **4**

Identify and justify the features that you would look for when selecting the timber for the chest.

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**Question 5 continues on page 20**

Question 5 (continued)

- (e) Discuss the issues that must be considered when preparing for, and applying, the finish to the timber. Outline the responsibilities of employers to safeguard their employees during this process. **8**

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