



NSW Education Standards Authority

**2019** HIGHER SCHOOL CERTIFICATE EXAMINATION

# Industrial Technology

## Timber Products and Furniture Technologies

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### General Instructions

- Reading time – 5 minutes
- Working time –  $1\frac{1}{2}$  hours
- Write using black pen
- Draw diagrams using pencil
- Calculators approved by NESA may be used
- Write your Centre Number and Student Number at the top of page 5

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### Total marks: 40

#### Section I – 10 marks (pages 2–4)

- Attempt Questions 1–10
- Allow about 20 minutes for this section

#### Section II – 15 marks (pages 5–8)

- Attempt Questions 11–15
- Allow about 35 minutes for this section

#### Section III – 15 marks (page 9)

- Attempt Question 16
- Allow about 35 minutes for this section

## Section I

10 marks

Attempt Questions 1–10

Allow about 20 minutes for this section

Use the multiple-choice answer sheet for Questions 1–10.

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- 1 What is the most appropriate tool to use to dress the edge of a timber board 1500 mm × 140 mm × 20 mm straight and square to the face?
- A. Jack plane
  - B. Try square
  - C. Trying plane
  - D. Straight edge

- 2 Radiata pine logs are to be milled for use as fence palings.

Which conversion method is best suited to milling the logs?

- A. Live sawing
- B. Slab sawing
- C. Back sawing
- D. Quarter sawing

- 3 A tool is shown.



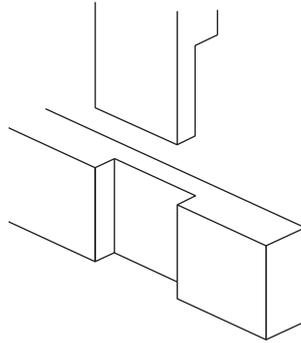
What is the name of the tool?

- A. Auger bit
- B. Speed bore
- C. Forstner bit
- D. Counter bore

4 Why should care be taken when using red cedar in a school workshop?

- A. It is very heavy.
- B. It stains fingers black.
- C. It is known to cause allergic reactions.
- D. Router cutters need to be very sharp or they will burn the timber.

5 A timber joint is shown.



Which type of joint is this?

- A. Bridle
  - B. Dowel
  - C. Rebate
  - D. Tee-halving
- 6 The introduction of a driver-operated forklift truck to move pallets in a furniture factory is an example of
- A. automation.
  - B. industrialisation.
  - C. mechanisation.
  - D. multiskilling.
- 7 A table top, 1800 mm × 900 mm, is to be assembled from 6 lengths of timber using widening joints, each 1800 mm × 150 mm × 25 mm.

Which tool would be used to hold the table top together while the glue dries?

- A. G-cramp
- B. Sash cramp
- C. Strap cramp
- D. Framing cramp

- 8 The veneered MDF panels required for a project are shown in the table.

<i>Part name</i>	<i>L (mm)</i>	<i>W (mm)</i>	<i>T (mm)</i>	<i>Quantity</i>
Top	1000	500	18	1
Side	500	500	18	2
Base	1000	500	18	1

18 mm thick veneered MDF costs \$30 per square metre. Ignoring waste, what is the cost of the panels for ONE project?

- A. \$90  
B. \$75  
C. \$45  
D. \$37
- 9 Which list contains only properties of general purpose polyvinyl acetate (PVA) glue?
- A. Ready to use, waterproof and easy clean up  
B. Ready to use, water soluble and easy clean up  
C. Ready to use, water soluble and solvent to clean up  
D. Needs to be mixed, waterproof and easy clean up
- 10 Which of the following shows the best sequence of tools required to prepare a timber surface for clear finishing?

- A. 

1. Cabinet scraper 2. Smoothing plane 3. 180 grit abrasive paper 4. 240 grit abrasive paper
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- B. 

1. Smoothing plane 2. 240 grit abrasive paper 3. Cabinet scraper 4. 180 grit abrasive paper
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- C. 

1. Cabinet scraper 2. Smoothing plane 3. 240 grit abrasive paper 4. 180 grit abrasive paper
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- D. 

1. Smoothing plane 2. Cabinet scraper 3. 180 grit abrasive paper 4. 240 grit abrasive paper
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**Section II****15 marks****Attempt Questions 11–15****Allow about 35 minutes for this section**

Answer the questions in the spaces provided. These spaces provide guidance for the expected length of response.

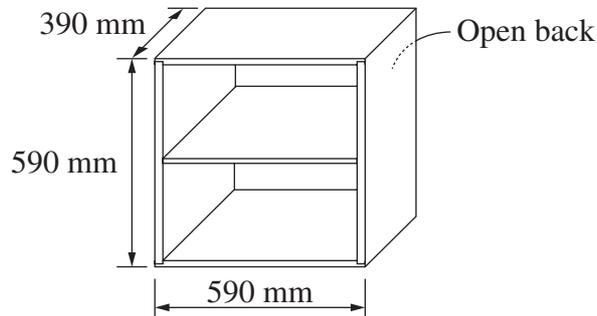
Show all relevant working in questions involving calculations.

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**Please turn over**

Use the following information to answer Questions 11–15.

The diagram shows the overall dimensions of a storage box with an open back. It is designed to maximise its fit in an existing racking system.



Each box is manufactured from 16 mm thick, interior grade, 7-ply plywood.

**Question 11** (1 mark)

State ONE property of plywood, other than price, that makes plywood an appropriate material for this project.

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**Question 12** (2 marks)

The horizontal dividing shelf of the box is to be fixed in position at the time of assembly.

Sketch and label a suitable carcass joint for this situation.

**Question 13** (3 marks)

Each plywood sheet to be used measures 2440 mm × 1220 mm × 16 mm.

Calculate the minimum number of sheets required to make 150 units.

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**Question 14** (4 marks)

Describe the processes involved, from log to sheet, in manufacturing one of the plywood sheets required for this project.

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**Question 15** (5 marks)

A sample of the storage box shown on page 6 is to be constructed in a school workshop using only hand tools and portable power tools.

Explain the processes that are needed to produce one of the corner rebate joints.

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## **Industrial Technology**

### **Timber Products and Furniture Technologies**

#### **Section III**

**15 marks**

**Attempt Question 16**

**Allow about 35 minutes for this section**

Answer the question in the Section III Writing Booklet. Extra writing booklets are available.

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#### **Question 16** (15 marks)

Answer part (a) of the question on pages 2–4 of the Writing Booklet.

- (a) Describe how new and emerging technologies have benefited the timber products and furniture industry. Provide examples to support your answer. **5**

Answer part (b) of the question on pages 5–8 of the Writing Booklet.

- (b) Discuss strategies an employer could adopt to overcome employee resistance to the implementation of new and emerging technologies in the timber products and furniture industry. **10**

**End of paper**

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