

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

2009

**HIGHER SCHOOL CERTIFICATE
EXAMINATION**

Construction

General Instructions

- Reading time – 5 minutes
- Working time – 2 hours
- Write using black or blue pen
- Board-approved calculators may be used
- Write your Centre Number and Student Number at the top of pages 9 and 13

Total marks – 80

Section I Pages 2–6

15 marks

- Attempt Questions 1–15
- Allow about 15 minutes for this section

Section II Pages 9–16

35 marks

- Attempt Questions 16–23
- Allow about 45 minutes for this section

Section III Pages 17–18

30 marks

- Attempt TWO questions from Questions 24–26
- Allow about 1 hour for this section

Section I

15 marks

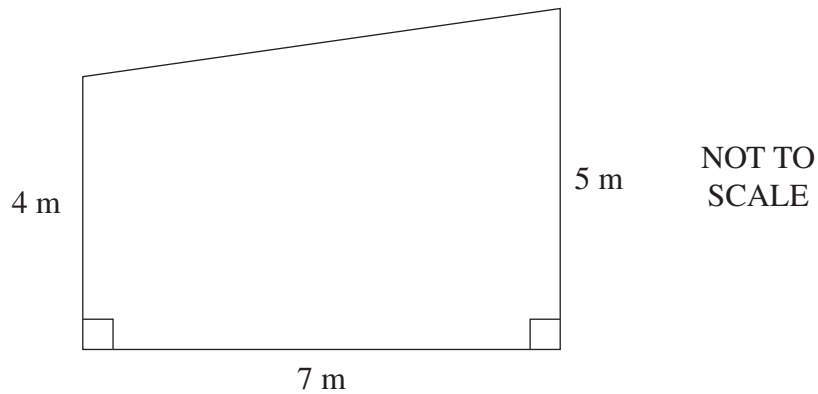
Attempt Questions 1–15

Allow about 15 minutes for this section

Use the multiple-choice answer sheet for Questions 1–15.

- 1 What should a ladder that is to be used near power lines be made from?
- (A) Fibreglass
 - (B) Aluminium
 - (C) Timber and steel
 - (D) Aluminium and plastic
- 2 A worker who is unconscious but breathing is found on a work site.
How should the person be placed while waiting for help to arrive?
- (A) With their feet raised to increase blood flow to the heart
 - (B) In a recovery position with the shoulder tilted to one side to assist breathing
 - (C) In a recovery position with the head tilted, chin lifted and the mouth slightly downward
 - (D) In a comfortable position, ensuring that any broken limbs are raised to prevent excessive loss of blood
- 3 What is the name of the procedure for transferring an existing datum to another point of reference?
- (A) Levelling
 - (B) Plumbing
 - (C) Squaring
 - (D) Checking for accuracy

- 4 What is the area of the courtyard shown?



- (A) 31.5 m^2
- (B) 49.5 m^2
- (C) 315 m^2
- (D) 495 m^2
- 5 What is the purpose of Occupational Health and Safety (OHS) control measures?
- (A) To reduce the number of hazards
- (B) To reduce the likelihood of an accident occurring
- (C) To monitor the volume of hazardous materials on the work site
- (D) To implement appropriate plant and equipment training practices
- 6 Using the following specifications, calculate the amount of concrete to be ordered.
- concrete slab dimensions: $6 \text{ m} \times 5.5 \text{ m}$
 - concrete slab thickness: 125 mm
 - allow 10% wastage
- (A) 4.1 m^3
- (B) 4.2 m^3
- (C) 4.5 m^3
- (D) 4.6 m^3

- 7 What is the last stage used in the hierarchy of risk control measures?
- (A) Eliminate the risk
 - (B) Isolating the hazard
 - (C) Introducing engineering controls
 - (D) Use personal protective equipment

- 8 The graph shows the number and type of workplace injuries on a building site.



What is the likely cause of most injuries on this building site?

- (A) Inhaled chemical fumes
 - (B) Incorrect manual handling
 - (C) Objects falling from an overhead platform
 - (D) Exposure to noise levels above 100 decibels
- 9 What does successful teamwork rely upon?
- (A) The use of time management charts
 - (B) Workers meeting their responsibilities and duties
 - (C) Choosing correct materials for the construction task
 - (D) Having workers with a variety of experiences and cultural backgrounds

- 10** What is the correct base to height ratio when working with a ladder against a wall?
- (A) 4:1
 - (B) 3:1
 - (C) 1:4
 - (D) 1:3
- 11** What is the primary purpose of using hessian or fabric sheeting on a fence around a building site?
- (A) To reduce noise
 - (B) To suppress dust
 - (C) To improve appearances
 - (D) To prevent objects falling
- 12** What information does a quantity surveyor provide in the construction industry?
- (A) OHS policies
 - (B) Material costings
 - (C) Electrical requirements
 - (D) Structural specifications
- 13** What does a Safe Work Method Statement list?
- (A) The steps required to make a project
 - (B) The number of people involved in the project
 - (C) Details of all costs associated in completing a project
 - (D) All tools, resources, safety issues and procedures in a job

Please turn over

- 14** What role should the Environmental Protection Authority (EPA) have in the disposal of toxic waste material on a building site?
- (A) To seal and place the waste in garbage bins
 - (B) To supply contractors to remove the waste from the site
 - (C) To provide requirements for the safe removal of the waste
 - (D) To pay contractors to seal the waste for later removal from the site
- 15** What three pieces of information are obtained from a floor plan?
- (A) Roof pitch, door width, and boundary levels
 - (B) Footing size, roof structure, and site orientation
 - (C) Window height, room sizes, and building orientation
 - (D) Location of windows, type of roof, and drawing scale

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Construction

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Centre Number

Section II

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Student Number

35 marks

Attempt Questions 16–23

Allow about 45 minutes for this section

Answer the questions in the spaces provided.

Question 16 (4 marks)

- (a) Outline the process of grinding and honing a jack plane blade. 2

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- (b) Describe a technique that can be used to prevent end grain splitting when planing a chamfer on a piece of timber. 2

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Question 17 (3 marks)

Outline the strategies used to reduce hazards to the public and workers when setting up pedestrian traffic control on a construction site.

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Question 18 (3 marks)

A worker in an enclosed area of a building site has been affected by chemicals and is found unconscious.

Outline the emergency procedure that should be followed.

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Question 19 (4 marks)

(a) What is the purpose of an OHS committee on a construction site? **2**

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(b) What are the responsibilities of both the employer and employee in relation to ultraviolet (UV) radiation on a construction site? **2**

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Question 20 (5 marks)

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Outline the required maintenance, safe usage and storage for ONE item of plant listed below.

- Portable air compressor
- Portable electric generator
- Concrete drum mixer

Plant selected:

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Centre Number

Section II (continued)

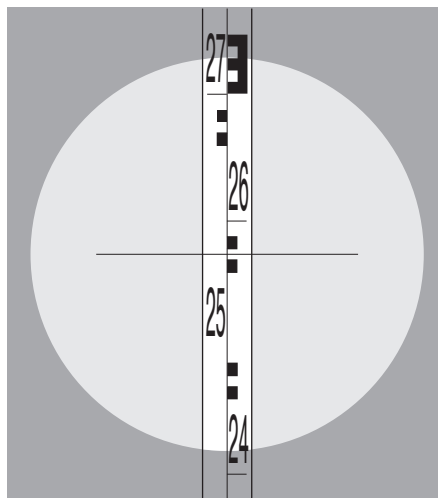
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Student Number

Question 21 (2 marks)

Identify the measuring tool shown and outline an application for its use.

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Line of Sight, D Schlyder, General Construction, An Industry Study for Secondary Schools © PCS Publications, 2004

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Question 22 (10 marks)

- (a) Complete the table below to calculate the cost of materials required to manufacture a timber picnic table. **2**

<i>Part name</i>	<i>Qty</i>	<i>W</i>	<i>T</i>	<i>L</i>	<i>Total length</i>	<i>Cost per metre</i>	<i>Total cost</i>
Table tops	5	140	45	1800		\$4.94	
Seat tops	4	140	45	1800		\$4.94	
Legs	4	90	90	900		\$12.40	
Braces	2	90	45	750		\$2.80	
						<i>Total cost</i>	

- (b) What is a suitable timber that could be used to manufacture the table? Justify your choice. **2**

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- (c) What is a suitable mechanical fastener to assemble the outdoor picnic table components? Justify your choice. **2**

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Question 22 continues on page 15

Question 22 (continued)

(d) Describe a process of levelling the picnic table prior to fixing it to a concrete slab. **2**

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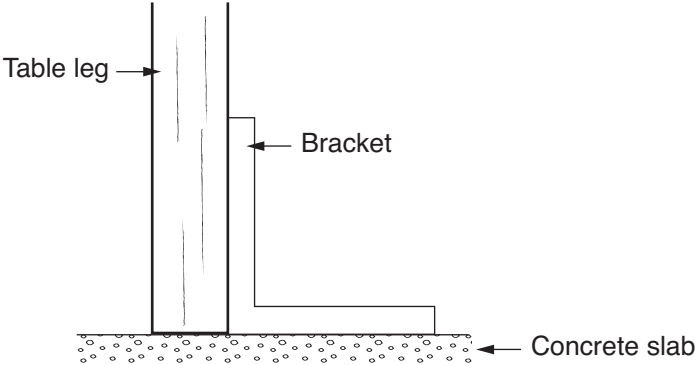
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(e) The diagram shows the picnic table leg on the concrete slab. Outline an appropriate method of fixing the picnic table to the slab. **2**



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End of Question 22

Question 23 (4 marks)

Safety signs are a graphic reminder of safety requirements on a construction site.

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Describe a sign from each of the following categories and provide an application for its use.

- Prohibition signs
- Hazard warning signs
- Emergency information signs

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Construction

Section III

30 marks

Attempt TWO questions from Questions 24–26

Allow about 1 hour for this section

Answer each question in a SEPARATE writing booklet. Extra writing booklets are available.

In your answers you will be assessed on how well you:

- demonstrate relevant knowledge and understanding
 - communicate ideas and information, using precise industry terminology and appropriate workplace examples
 - organise information in a well-reasoned and cohesive response
 - solve proposed issues or problems
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Question 24 (15 marks)

Explain how the construction industry responds to changes in the economic climate in Australia.

In your answer you may consider:

- Employers
- Employees
- Manufacturers
- Clients
- Government

Question 25 (15 marks)

An evacuation alarm on a large construction site has been sounded, due to an electrical fire.

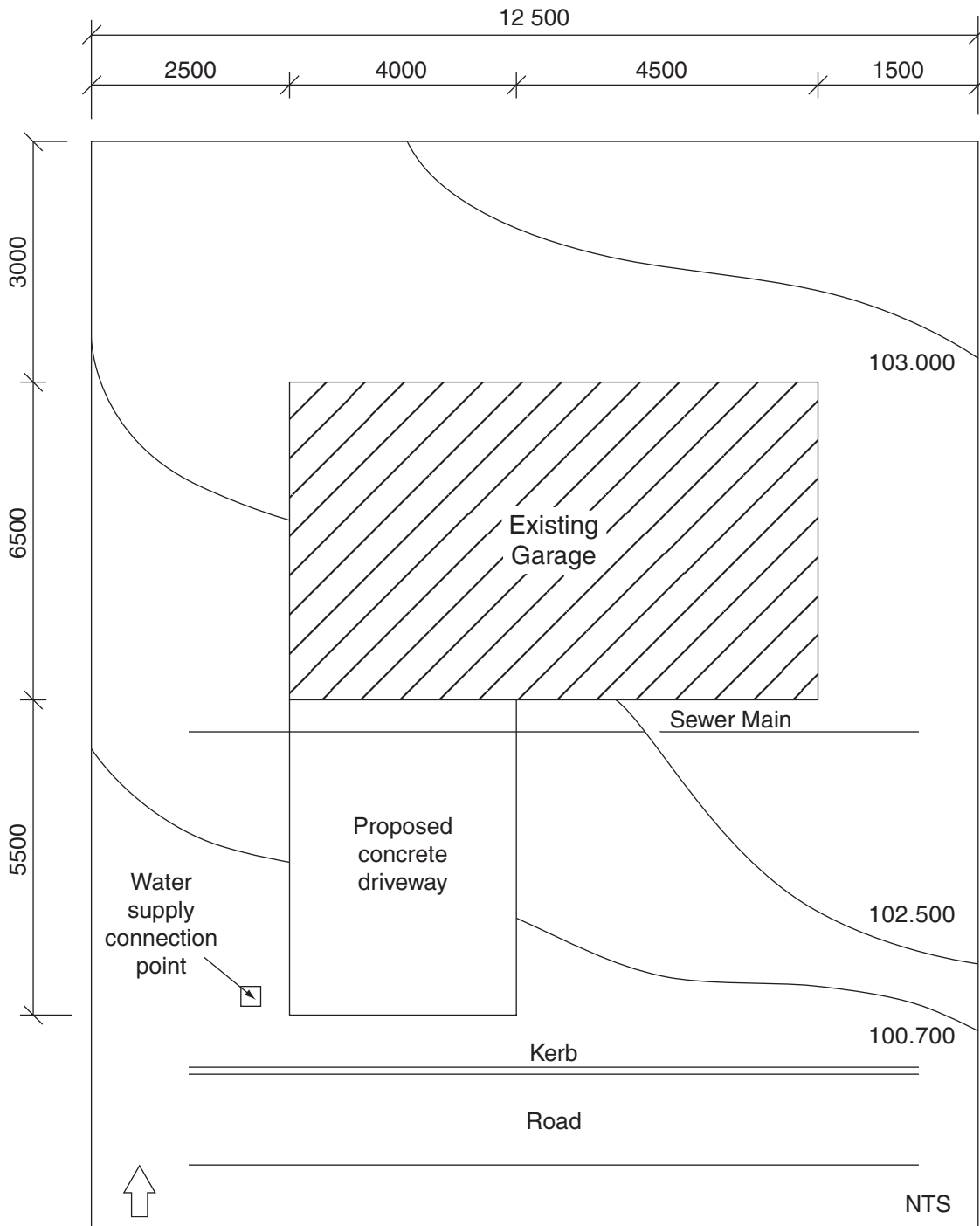
Discuss the procedures that must be followed by management and workers during the emergency, the investigation, and the short-term impact on the work site.

Please turn over

Question 26 (15 marks)

You are to plan and organise the preparation of a concrete driveway on the given site.

Describe the potential hazards, related risk controls and responsibilities in completing the construction project.



End of paper