

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

2006

**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 16–22
- Allow about 45 minutes for this section

Section III Pages 17–19

30 marks

- Attempt TWO questions from Questions 23–25
- 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.

Select the alternative A, B, C or D that best answers the question. Fill in the response oval completely.

Sample: $2 + 4 =$ (A) 2 (B) 6 (C) 8 (D) 9
A B C D

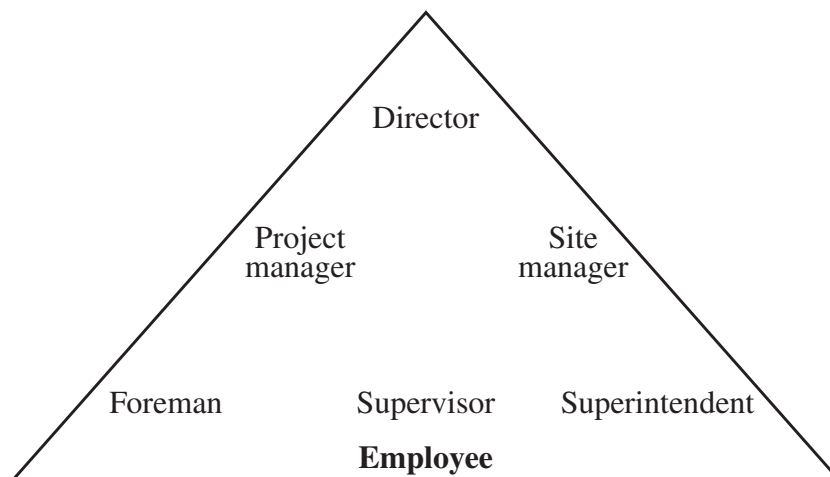
If you think you have made a mistake, put a cross through the incorrect answer and fill in the new answer.

A B C D

If you change your mind and have crossed out what you consider to be the correct answer, then indicate the correct answer by writing the word **correct** and drawing an arrow as follows.

A B C D
correct ↙

- 1 The diagram shows the structure of an employee's workplace.



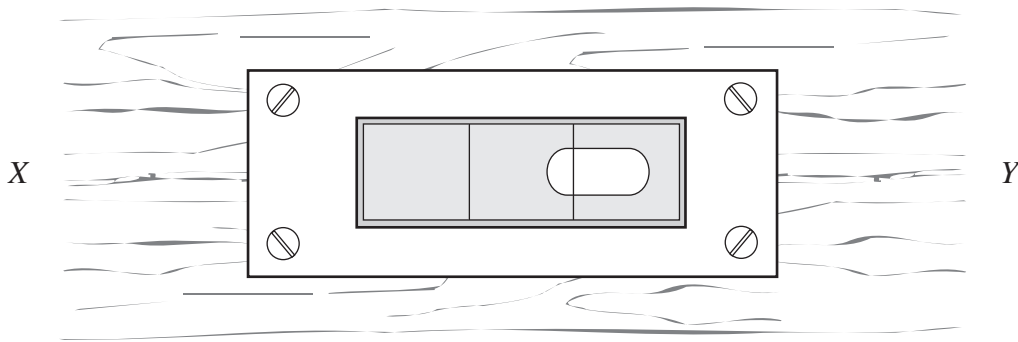
With whom should an employee first discuss a safety problem?

- (A) Director
 - (B) Foreman
 - (C) Site manager
 - (D) Project manager
- 2 What would need to be done to make a downpipe 'plumb'?
- (A) Have a plumber fit it into place
 - (B) Align it perpendicular to the horizontal
 - (C) Connect it to the gutter and stormwater pipe
 - (D) Make it true and straight along its entire length
- 3 An employer seeks to inform employees of an immediate safety concern, and to discuss this with them. Which is the most appropriate communication method to be used?
- (A) An on-site meeting
 - (B) A memorandum
 - (C) A text message or fax
 - (D) A formal written document

- 4 Which is the most appropriate tool to measure the length of a cycleway around a park?
- (A) Rule
 - (B) Dumpy level
 - (C) Tape measure
 - (D) Trundle wheel
- 5 A site is to be prepared for the placing of a concrete slab, on ground.
- Which of the following lists the most appropriate tools for the task?
- (A) Shovel, crow bar, mattock
 - (B) Wheelbarrow, elevator, pick
 - (C) Goggles, pinch bar, mattock
 - (D) Lump hammer, crow bar, pick
- 6 Which is the most appropriate method of programming a work sequence for a project involving multiple trades?
- (A) Bar charts
 - (B) Video tape
 - (C) Time sheets
 - (D) Diary entries
- 7 By what other name is a job safety analysis (JSA) known?
- (A) Job sheet
 - (B) Site guideline
 - (C) Material safety data sheet
 - (D) Safe work method statement

- 8** What is the purpose of a Material Safety Data Sheet (MSDS)?
- (A) To show important safety signs
 - (B) To explain the Australian Safety Standards
 - (C) To inform workers about safety procedures when using the product
 - (D) To ensure that all work is completed correctly to the manufacturer's specification
- 9** Which of the following are features of a safe work method statement?
- (A) Sequence, signs, inductions
 - (B) Procedures, hazards, controls
 - (C) Sequence, first aid, inductions
 - (D) Procedures, instructions, controls
- 10** What is the responsibility of employees with regard to occupational health and safety (OHS) requirements?
- (A) Provide first aid at all times
 - (B) Follow a Workcover directive
 - (C) Follow all employer directions
 - (D) Supply personal protective equipment (PPE) as required
- 11** What would be the most appropriate use for an electric plane?
- (A) Dressing a large surface
 - (B) Docking timber to length
 - (C) Finishing a timber surface
 - (D) Applying a ten-millimetre chamfer
- 12** Noise and dust have been identified as potential hazards on a worksite.
- Which is the best method to address these hazards?
- (A) Erect screens and covers
 - (B) Prefabricate the project off-site
 - (C) Utilise good housekeeping procedures
 - (D) Use a vacuum cleaner and personal protective equipment (PPE)

- 13 A functioning spirit level is placed on a floor joist. The bubble reading is shown below.



- Which of the following can be determined from the bubble?
- (A) The level is inaccurate.
 - (B) The floor joist is horizontal.
 - (C) The floor joist slopes up to the *X*.
 - (D) The floor joist slopes up to the *Y*.
- 14 Which of the following would best define a datum point?
- (A) A contour line
 - (B) A reduced level (RL)
 - (C) A permanent or temporary reference
 - (D) A point projected through a laser level
- 15 An excavation is being carried out on a site with limited access. Only bins with a capacity of 3 cubic metres can be used on this site. It is necessary to remove 25 cubic metres of compacted clay. The bulking rate is 12%.

How many bins are required?

- (A) 8
- (B) 9
- (C) 10
- (D) 11

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Construction

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Centre Number

Section II

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Student Number

35 marks

Attempt Questions 16–22

Allow about 45 minutes for this section

Answer the questions in the spaces provided.

Marks

Question 16 (4 marks)

On a large worksite you find that a fellow worker, who was using an electric impact hammer, has collapsed and is unconscious.

4

Describe how you would assess the situation and the procedures you would follow.

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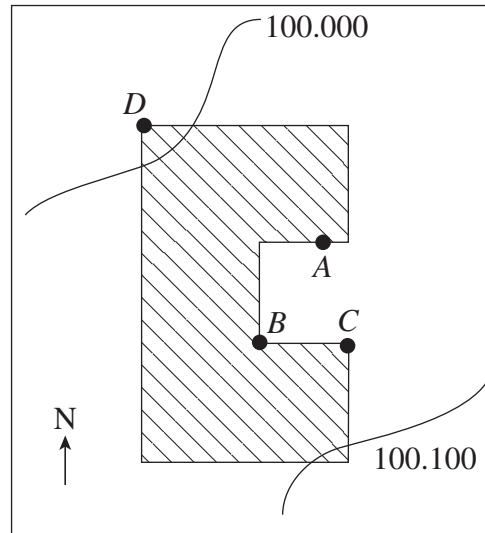
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Question 17 (3 marks)

The site plan below represents an existing dwelling.



- (a) Indicate with a \times on the site plan where you would set up a dumpy level to take readings at points *A*, *B* and *C*. **1**
- (b) Outline the process that would be needed if an additional reading at point *D* is required. **2**

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Question 18 (5 marks)

A sling of random length hardwood flooring boards has been delivered on the footpath near a building site.

- (a) Outline how the flooring boards should be stored on site. **2**

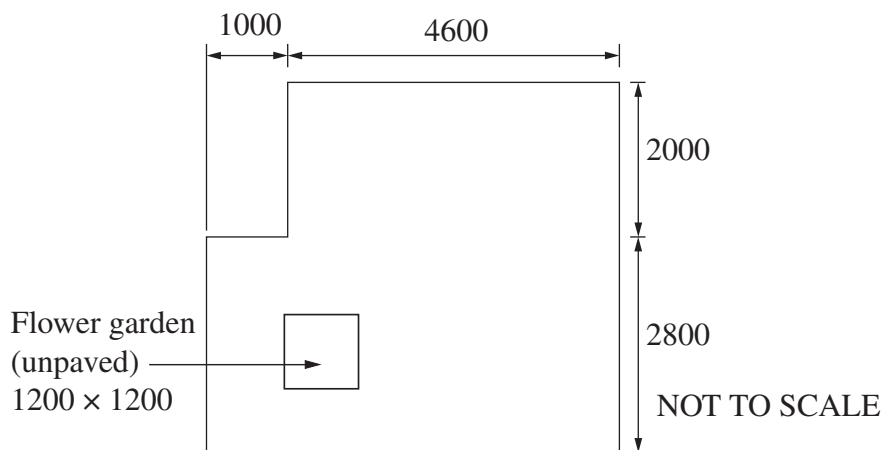
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- (b) Describe the correct manual handling techniques for moving the flooring boards from the footpath to the storage area on site. **3**

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Question 19 (5 marks)

A landscaper has been asked to consider paving the courtyard shown.



- (a) Identify a dust suppression procedure to be used by the construction personnel when cutting the paving bricks. **1**

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- (b) Calculate the volume of bedding sand needed to cover this courtyard to a depth of 50 mm. **2**

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- (c) The paving bricks measure 100 mm × 200 mm and cost 85 cents each. Calculate the cost of the paving bricks required to cover the courtyard. Allow 10% for waste. **2**

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Centre Number

Section II (continued)

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Student Number

Marks

Question 20 (6 marks)

Industry signage is provided at entry points on construction sites. The photograph below illustrates five signs on a gate.



- (a) Select ONE sign from the photograph and identify the colours used on that sign. **1**

Safety sign number:

Colours:

Question 20 continues on page 14

Question 20 (continued)

- (b) Sketch a prohibition sign in the space below. Label the different parts of the sign, including the colours used. **2**

- (c) Safety signs are effective communicators of information. Using the photograph on the previous page describe features of safety signs that make them effective communicators. **3**

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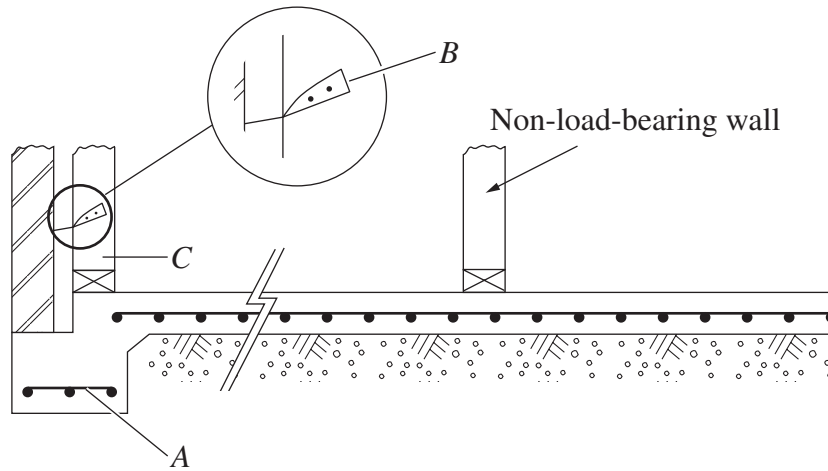
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End of Question 20

Question 21 (6 marks)

Use the diagram of a part-sectional view to answer parts (a) and (b).



- (a) Complete the table, identifying the components *A*, *B* and *C* and providing a purpose for each component. **3**

<i>Component</i>	<i>Purpose</i>
<i>A</i>	
<i>B</i>	
<i>C</i>	

- (b) The non-load-bearing wall indicated in the part-sectional view needs to be a load-bearing wall. Discuss the implications when considering this amendment to the specifications. **3**

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Question 22 (6 marks)

A contract carpenter is replacing a framing nail gun.

- (a) Outline factors the carpenter would need to consider when choosing between an electric framing nail gun and a pneumatic framing nail gun. **2**

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- (b) Describe the safe operating procedures for the use of EITHER an electric framing nail gun OR a pneumatic framing gun on an unpowered site. **4**

Type of framing nail gun.....

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Construction

Section III

30 marks

Attempt TWO questions from Questions 23–25

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 23 (15 marks)

Discuss, with the use of examples, how each of the following issues can improve productivity/efficiency in the construction industry.

- Industrial awards/enterprise agreements
- Industry training
- Conflict resolution procedures
- Safety induction training

Please turn over

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
-

Question 24 (15 marks)

Use the news article below to answer Question 24.

9th September 2005

Roofview Constructions Pty Ltd was convicted and fined \$15 000 after pleading guilty to a breach of S19(1) of the Occupational Health and Safety Act 2000.

On the 3rd December 2004 an apprentice roof tiler was severely injured after falling from roof trusses on a double storey construction site. The apprentice sustained spinal and leg injuries.

The company failed to provide a safe system of work and did not meet their 'duty of care'.

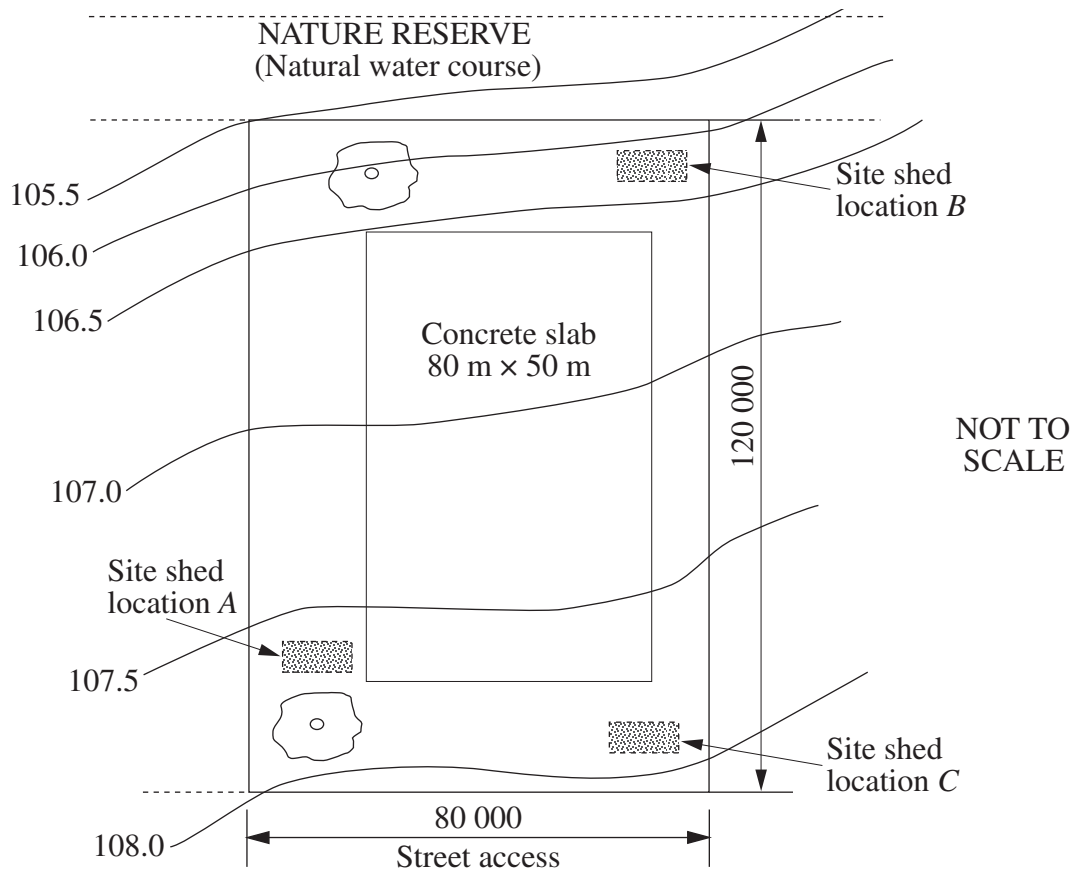
Discuss how accidents such as the one outlined in the article could have been prevented.

In your answer, consider the roles of the following:

- employers
- employees
- government
- trade unions.

Question 25 (15 marks)

A site plan for a factory and rental costs are shown.



Rental costs	
Temporary fencing	\$13.74/m per six months
Site shed 3.6 m × 2.4 m	\$200 per month
Portable toilet	\$40 per week
Temporary power supply	\$1000 installation + \$7 per week

Write a project plan for the establishment of the factory site, using the information provided.

In your response, analyse and make recommendations on:

- location of the site shed
- site security
- total rental costs for a six-month construction period
- management of environmental issues.

End of paper

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