BOARD OF STUDIES
NEW SOUTH WALES

**2002**

**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 page 9

**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 16–25
- Allow about 45 minutes for this section

**Section III** Page 17

**30 marks**

- Attempt TWO questions from Questions 26–28
- 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.

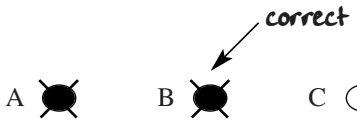
**Sample:** 2 + 4 = (A) 2 (B) 6 (C) 8 (D) 9

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 ○

**1** How should a measurement of 12 metres be printed on a building plan?

(A) 12

(B) 12 m

(C) 12.000

(D) 12 000

**2** On a construction site, who is responsible for reporting safety breaches to WorkCover?

(A) The union

(B) The employer

(C) The employee

(D) The Department of Health and Safety

**3** On a large construction site, who is responsible for the delegation of duties to workers, their safety and the coordination of subcontractors?

(A) The builder

(B) The general foreperson

(C) The construction manager

(D) The Occupational Health and Safety officer

**4** Which of the following is NOT considered a hazardous material on a construction site?

(A) Hydrated lime

(B) Portland cement

(C) Coarse aggregate

(D) Hydrochloric acid

**5** Which of the following levelling devices is the most appropriate for one person to use for the transfer of level over 50 metres?

(A) Laser level

(B) Boning rods

(C) Telescopic level

(D) Hydrostatic level

**6** Building plans should be read in conjunction with a specification.

What is a building specification?

(A) A key to drawing symbols

(B) A set of WorkCover regulations

(C) A written description of materials

(D) A list of suppliers and subcontractors

**7** What are the units for measuring the capacity of an electric compressor?

(A) Litres per hour (L/h)

(B) Litres per second (L/s)

(C) Cubic metres per hour ($m^3$/h)

(D) Cubic metres per second ($m^3$/s)

**8** Which of the following ratios would a builder use to mark out square?

(A) 1 : 5 : 11

(B) 2 : 4 : 5

(C) 3 : 4 : 5

(D) 5 : 7 : 10

**9** Which type of pump would be most suitable to move sludge on a construction site?

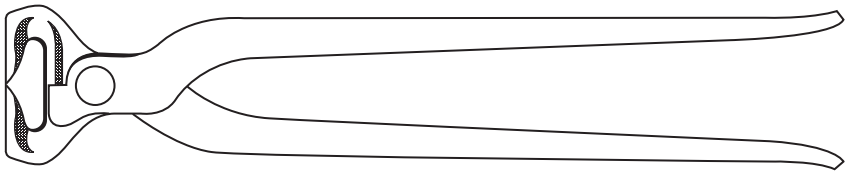
(A) Vane

(B) Piston

(C) Diaphragm

(D) Centrifugal

**10**



NOT ACTUAL SIZE

What is the most appropriate use for this tool?

(A) Cutting wire

(B) Electrical work

(C) Cutting reinforcing

(D) Extracting fasteners

**11** Which is the correct symbol for site datum?

(A) 

(B) 

(C) 

(D) 

**12** Which is the best method of communicating the personal protective equipment (PPE) requirements of a construction site?

(A) Staff memos

(B) Noticeboards

(C) Signage at entrances

(D) Meetings conducted by the union

**13** Which of the following abbreviations is used to specify strength when ordering concrete?

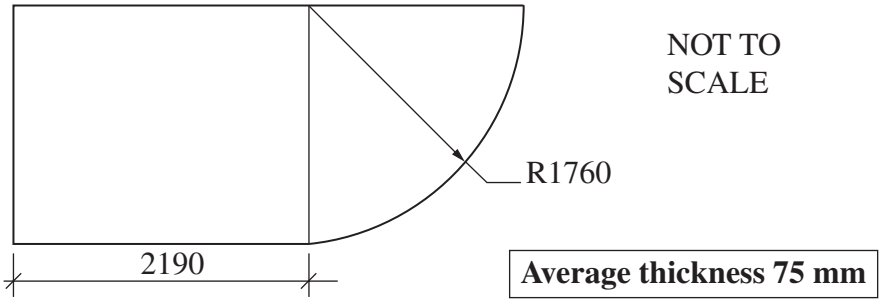
(A) $m^2$

(B) $m^3$

(C) kPa

(D) MPa

**14** What is the volume of the concrete slab shown in the diagram?




(A) 0.435 $m^3$

(B) 0.472 $m^3$

(C) 4.715 $m^3$

(D) 6.287 $m^3$

**15** On a construction site, what does a yellow and black triangular sign indicate?

(A) A potential hazard

(B) A prohibited action

(C) The position of safety equipment

(D) Personal protective equipment required

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# Construction

Centre Number

## Section II

Student Number

**35 marks**
**Attempt Questions 16–25**
**Allow about 45 minutes for this section**

Answer the questions in the spaces provided.

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**Marks**

**Question 16** (1 mark)

Outline a simple test used for checking the accuracy of a spirit level. **1**

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**Question 17** (1 mark)

What is the most appropriate slope ratio (rise : run) for the safe use of a ladder? **1**

..... : .....
(rise) (run)

**Question 18** (1 mark)

What does the abbreviation MSDS stand for? **1**

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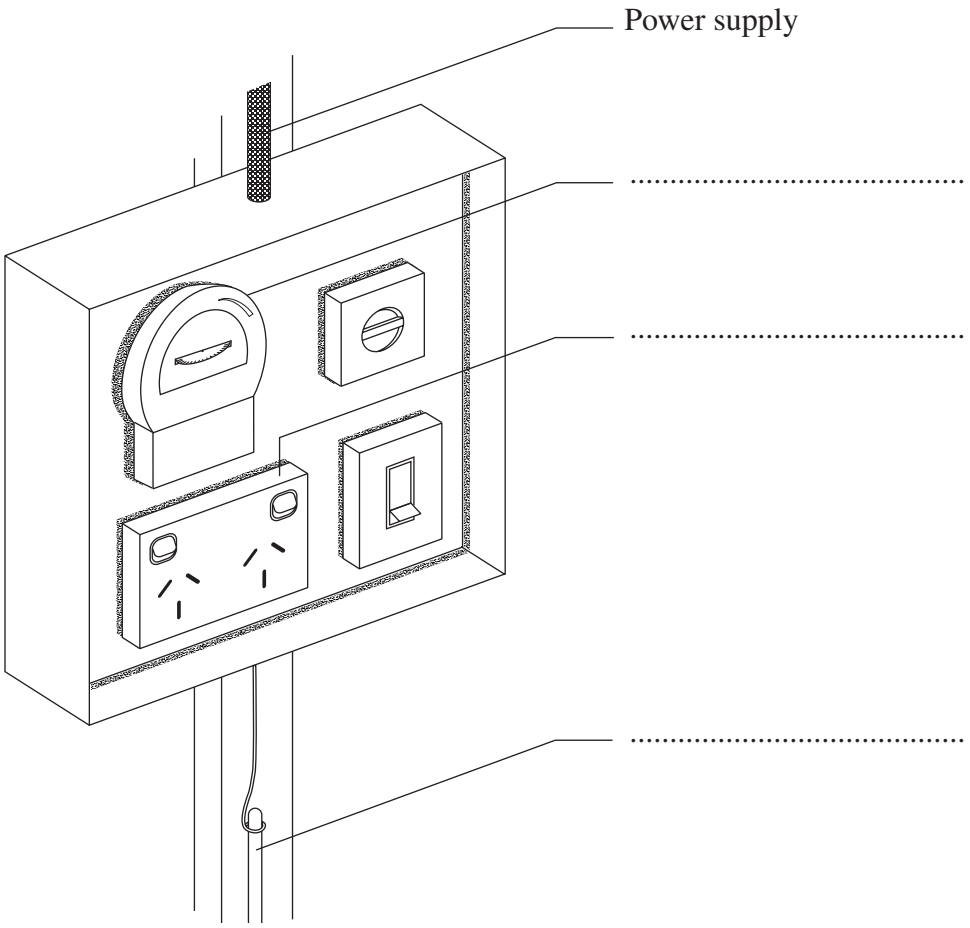
**Marks**

**Question 19** (3 marks)

Name the components of the builder's temporary power supply shown in the diagram. **3**




**Question 20** (3 marks)

Define the following terms. **3**

*Site datum* .....

.....

*Plumb* .....

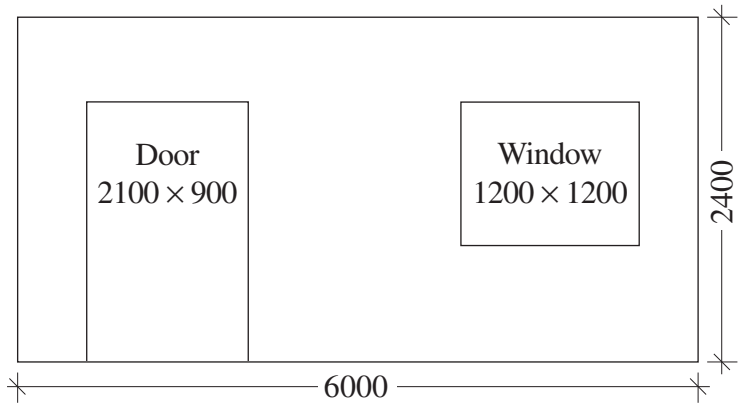
.....

*Level* .....

.....

**Marks**

**Question 21** (3 marks)




NOT TO SCALE

How many bricks would be required for the wall, assuming 50 bricks per square metre? Show all working. **3**

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**Marks**

**Question 22** (4 marks)

Portable circular saws are used to cut a variety of materials using appropriate blade types.

(a) Indicate the appropriate blade type for each material named. **2**

Timber .....

Sheet metal .....

(b) List the THREE important details that should be displayed on the electrical safety tag attached to a portable circular saw. **2**

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**Question 23** (5 marks)

In New South Wales, workers compensation legislation is designed to support employees injured in the workplace. Describe the benefits provided. **5**

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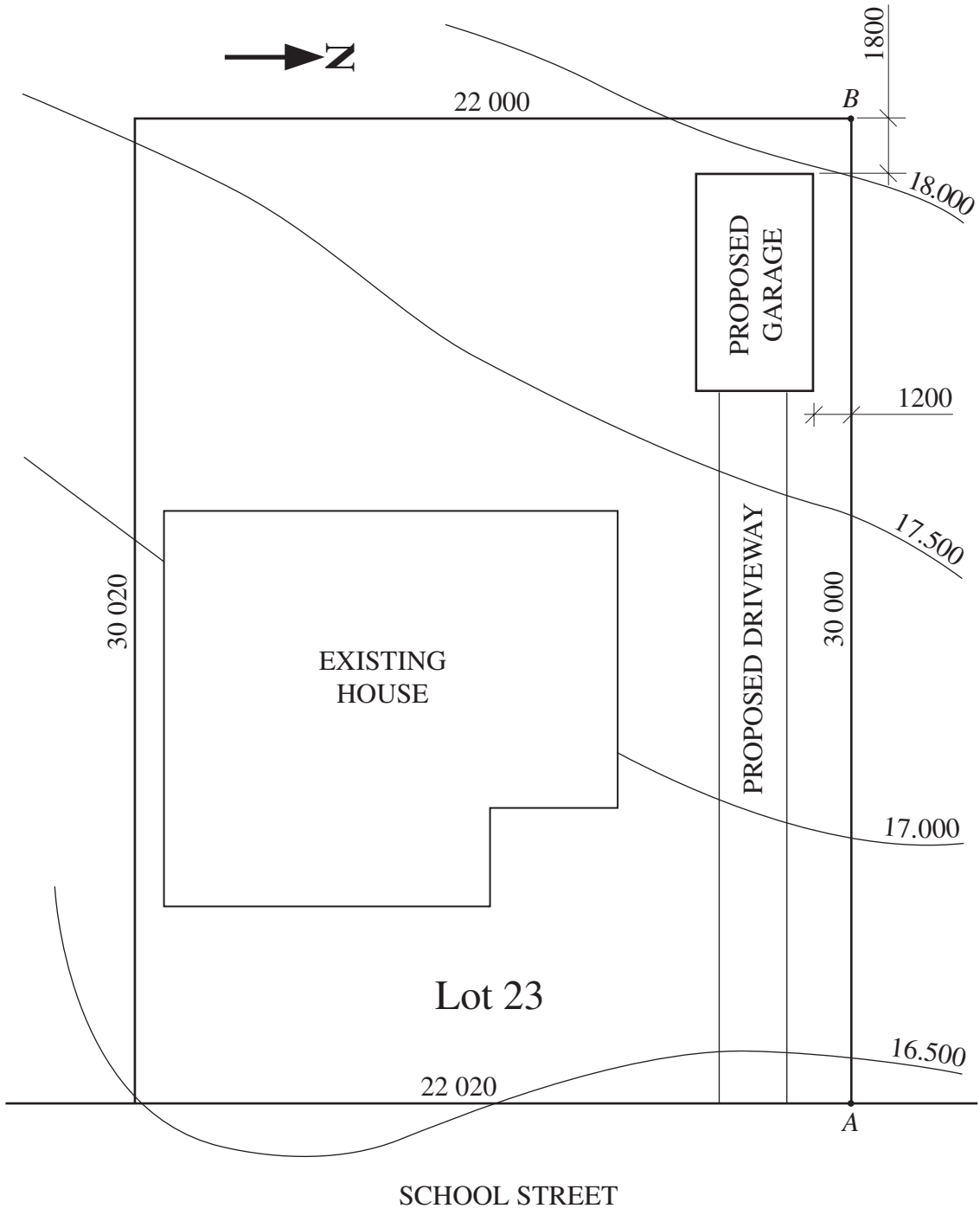
**Please turn over**

**Question 24** (6 marks)

Use the drawing to answer this question.




**Question 24 continues on page 15**

**Marks**

Question 24 (continued)

(a) What is this type of drawing typically called? **1**

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(b) What is the length of the western boundary? **1**

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(c) The proposed garage is 6500 × 3600, and the proposed driveway is parallel to boundary *AB*. The boundary junction at *A* is 90°. **1**

What is the length of the proposed driveway? (Include correct units in your answer.)

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(d) Estimate the reduced level (RL) of ground level at the south-east corner of the proposed garage. (Give your answer to the nearest 0.1 m.) **1**

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(e) List THREE other types of drawings that would usually accompany this drawing to enable the construction of the garage. **2**

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**End of Question 24**

**Marks**

**Question 25** (8 marks)

Describe each of the following types of health hazard, and give an example from the construction workplace for each. Identify the appropriate action to minimise the hazard for the examples provided.

(a) Physical ..... **2**

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Example .....

Action .....

.....

(b) Chemical ..... **2**

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Example .....

Action .....

.....

(c) Psychological ..... **2**

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Example .....

Action .....

.....

(d) Biological ..... **2**

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Example .....

Action .....

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# Construction

## Section III

**30 marks**
**Attempt TWO questions from Questions 26–28**
**Allow about 1 hour for this section**

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

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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 26** (15 marks)

New South Wales legislation requires workers in the construction industry to use 'Safe Work Method and Risk Assessment' and 'Job Safety Analysis' procedures for all construction tasks.

Explain how this requirement helps to manage risk for those working on a construction site. Support your explanation by the use of an appropriate example.

**Question 27** (15 marks)

Analyse the use and effectiveness of non-verbal communication techniques in the construction industry.

**Question 28** (15 marks)

Discuss, using examples, how the construction industry in New South Wales manages the potentially hazardous practice of working at height.

**End of paper**

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