

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

2004

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 2–8

15 marks

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

Section II Pages 9–16

35 marks

- Attempt Questions 16–24
- Allow about 45 minutes for this section

Section III Page 17

30 marks

- Attempt TWO questions from Questions 25–27
- 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

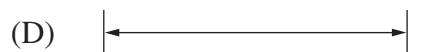
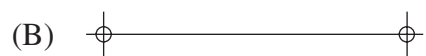
If you change your mind and have crossed out what you consider to be the correct answer, then indicate the correct answer by writing the word *correct* and drawing an arrow as follows.

A B C D
correct
↙

1 Who is responsible for the sequencing of trades on site?

- (A) Architect
- (B) Client
- (C) OHS committee
- (D) Site manager

2 Which of the following is NOT an appropriate way to indicate a dimension line on a floor plan?



3 For which of the following tasks would it be most appropriate to use a jack hammer?

- (A) Demolish timber wall frames.
- (B) Cut through reinforcing mesh.
- (C) Break up existing concrete floors.
- (D) Fix masonry anchors in a concrete wall.

4 What is the function of a dogman on a building site?

- (A) Control loads on the crane.
- (B) Dispose of waste material.
- (C) Keep stray animals off site.
- (D) Act as general assistant to the builder.

5 A measurement of 17.56 metres needs to be represented on a drawing which uses a 1 : 75 scale.

What would be the approximate scaled measurement?

- (A) 0.2 mm
- (B) 23.4 mm
- (C) 131.7 mm
- (D) 234.1 mm

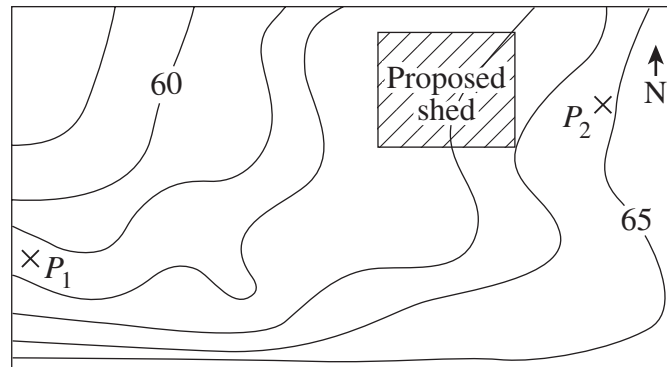
6 Which of the following is required for the safe use of a 240-volt vacuum cleaner on site?

- (A) ELCB
- (B) Rubber gloves
- (C) Safety goggles
- (D) Thick electrical leads

7 What is the main function of a time sheet?

- (A) Calculating wages
- (B) Estimating time for tasks
- (C) Recording of deliveries
- (D) Sequencing of subcontractors

Refer to the site plan shown below to answer Questions 8 and 9.

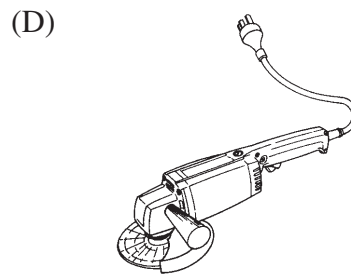
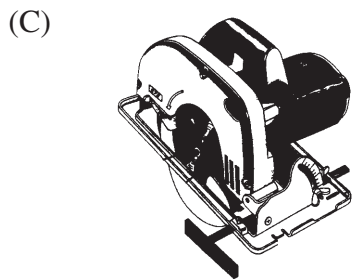
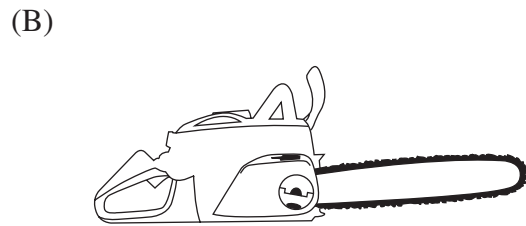
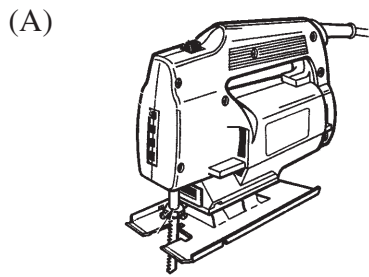


- 8 A plumber installing pipes between P_1 and P_2 needs to know the difference in level.

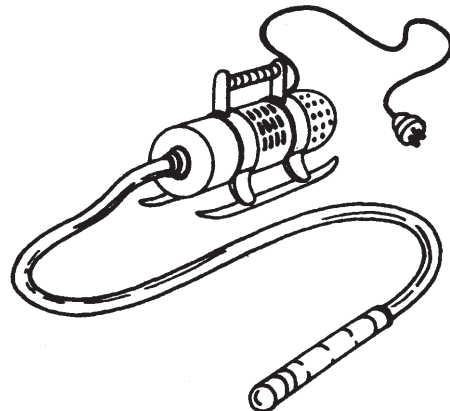
What is the difference in level?

- (A) 3.0 m
 - (B) 3.4 m
 - (C) 4.2 m
 - (D) 5.0 m
- 9 From which corner would surface water most likely leave the site?
- (A) NW
 - (B) NE
 - (C) SE
 - (D) SW

10 Which of the following tools would be most appropriate for a precision angled cut on 280 × 50 F10 HWD?



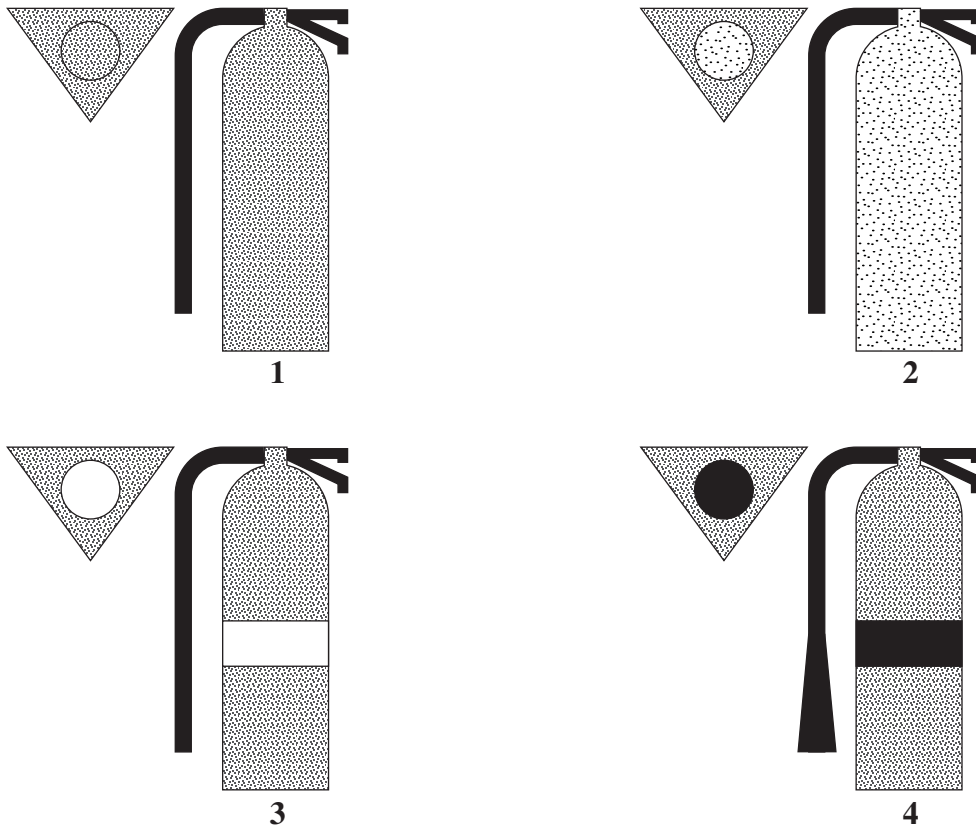
11 The diagram below shows an item of construction equipment.



What is the purpose of the equipment shown in the diagram?

- (A) To enable water in the concrete mix to rise to the surface
- (B) To enable trapped air in the concrete mix to rise to the surface
- (C) To enable trapped air and water in the concrete mix to rise to the surface
- (D) To enable thorough mixing of sand, cement, aggregate and water in concrete

12 Diagrams of four different types of fire extinguishers are shown below.



COLOUR KEY

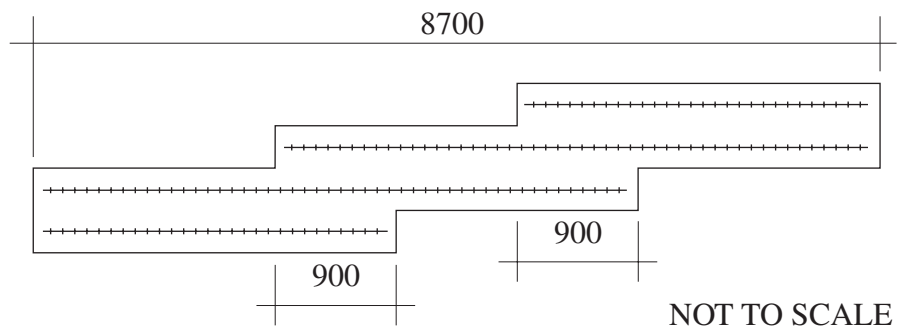
 Red	 Blue	 White	 Black
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An electrical circuit-board has caught fire.

Which types of fire extinguishers are appropriate to use in this situation?

- (A) 1 and 2
- (B) 2 and 3
- (C) 3 and 4
- (D) 4 and 1

- 13 How much concrete should be ordered to construct a path $15.5 \text{ m} \times 1.5 \text{ m}$, 80 mm thick with a 10% waste allowance?
- (A) 1.860 m^3
 (B) 2.000 m^3
 (C) 2.046 m^3
 (D) 2.200 m^3
- 14 To what do both the abbreviations CL and CL refer?
- (A) Ceiling level
 (B) Centre line
 (C) Concrete level
 (D) Curved line
- 15 The following diagram shows the sectional view of a concrete strip footing.



What length of trench mesh is required?

- (A) 17.4 m
 (B) 18.8 m
 (C) 20.2 m
 (D) 26.1 m

Construction

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Centre Number

Section II

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Student Number

35 marks

Attempt Questions 16–24

Allow about 45 minutes for this section

Answer the questions in the spaces provided.

Marks

Question 16 (2 marks)

Describe ONE advantage and ONE disadvantage of communicating by mobile phone text message with workers on a large construction site.

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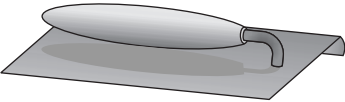
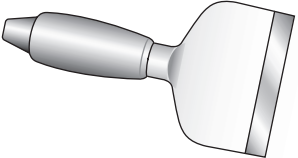
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Question 17 (4 marks)

Provide the name and the function of the tools shown.

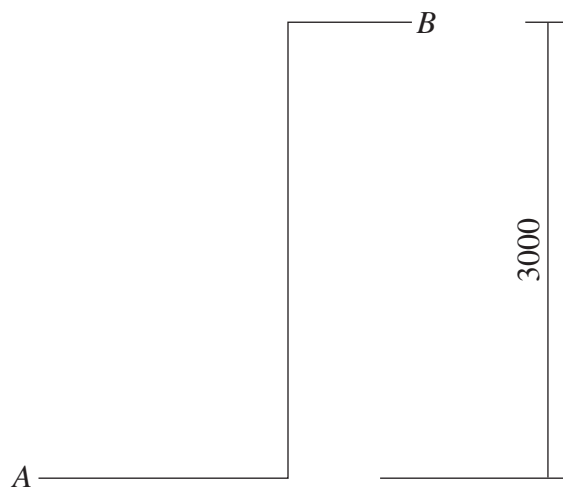
4

<i>Tools</i>	<i>Function</i>
 <p>Name</p>	<p>.....</p> <p>.....</p> <p>.....</p>
 <p>Name</p>	<p>.....</p> <p>.....</p> <p>.....</p>

Question 18 (2 marks)

Draw a line on the diagram below to indicate the correct slope and length for a ladder to allow access from horizontal surface *A* to horizontal surface *B*, 3 metres above.

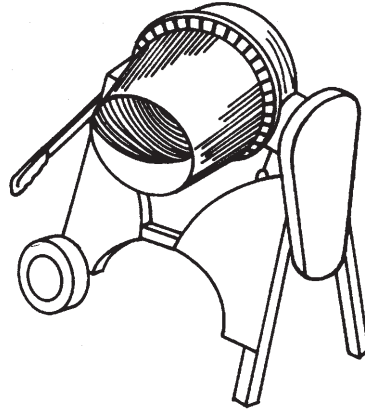
2



Question 19 (3 marks)

Identify and describe routine maintenance for the machine shown.

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Question 20 (3 marks)

A 40-kilogram bag of cement is to be lifted manually from the ground.

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Describe the correct lifting method.

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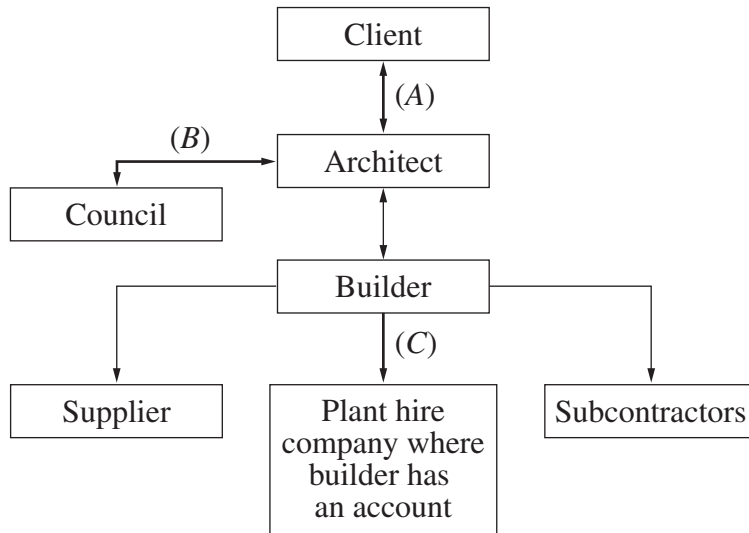
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Question 21 (6 marks)

A client wishes to make a major modification to building plans. The following flowchart shows the lines of communication between parties involved in the project.

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Communication methods

- telephone
- face-to-face
- written information
- email
- signage
- gesture

Select the most appropriate method of communication between the parties shown at (A), (B) and (C) on the chart to achieve these changes. Justify each selection.

Method shown at (A):

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Method shown at (B):

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Method shown at (C):

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Centre Number

Section II (continued)

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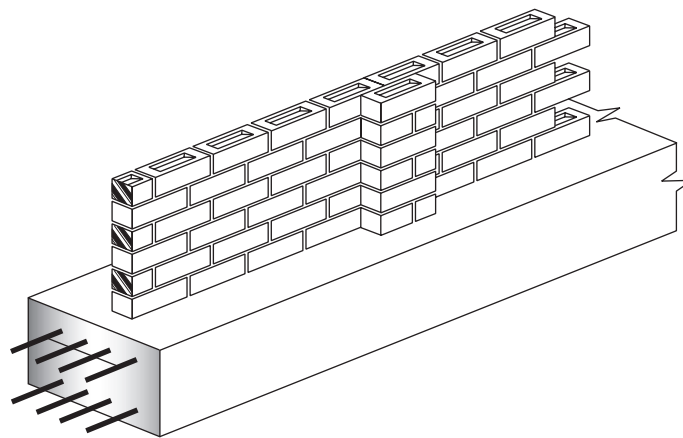
Student Number

Marks

Question 22 (3 marks)

The structure shown below is a combination of four different materials. Mortar is one of these materials.

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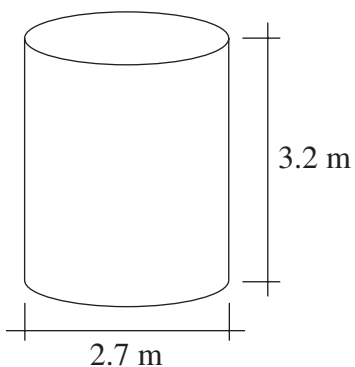


Using the table provided, identify the **THREE** other materials suitable for use in this structure. Describe the most important property for each material which makes it suitable for use in this structure.

<i>Material</i>	<i>Property</i>
Mortar	Moulds to shape and hardens to provide a strong bond
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Question 23 (6 marks)

- (a) How many four-litre cans of paint are required to apply two coats to the curved surface and the top of the tank shown? One litre covers 3.7 m^2 . (Show all working.) **4**



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Question 23 continues on page 15

Question 23 (continued)

- (b) Given that $1 \text{ m}^3 = 1000 \text{ L}$, what is the capacity of the tank in litres when full? **2**
(Show all working.)

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End of Question 23

Please turn over

Question 24 (6 marks)

A worker has suffered a deep gash on the arm caused by an exposed metal edge within a materials storage area on a large construction site.

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Describe the appropriate sequence of actions that should follow, indicating appropriate personnel for each action. Your answer should consider both immediate and longer term actions.

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Construction

Section III

30 marks

Attempt TWO questions from Questions 25–27

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
-

Question 25 (15 marks)

cost **1.** the price paid to acquire, produce, accomplish, or maintain anything. **2.** a sacrifice, loss, or penalty: *to work at the cost of one's health*. **3.** outlay or expenditure of money, time, labour, trouble, etc.

Reproduced with the permission of Macquarie Dictionary **MACQUARIE DICTIONARY**

With reference to the definitions above, identify and analyse the cost to the construction industry in the control of hazards. Your analysis needs to include reference to employees, employers, the client and the general community.

Question 26 (15 marks)

Use examples to explain why construction time can be reduced through consideration of materials selected, maintenance, sequence of operations and storage of materials.

Question 27 (15 marks)

Plumb, level and square are key concepts for the construction industry. Explain how and why construction workers implement these concepts in the selection of tools and equipment, the application of construction tasks and communication within the industry.

End of paper

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