BOARD OF STUDIES
NEW SOUTH WALES

2013

HIGHER SCHOOL CERTIFICATE EXAMINATION

Construction

General Instructions

- Reading time – 5 minutes
- Working time – 2 hours
- Write using black or blue pen
  Black pen is preferred
- Board-approved calculators may be used
- Write your Centre Number and Student Number at the top of pages 9, 11, 13 and 15

Total marks – 80

Section I Pages 2–7

15 marks

- Attempt Questions 1–15
- Allow about 20 minutes for this section

Section II Pages 9–17

35 marks

- Attempt Questions 16–21
- Allow about 50 minutes for this section

Section III Page 19

15 marks

- Attempt Question 22
- Allow about 25 minutes for this section

Section IV Page 20

15 marks

- Attempt Question 23
- Allow about 25 minutes for this section

Section I

15 marks
Attempt Questions 1–15
Allow about 20 minutes for this section

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

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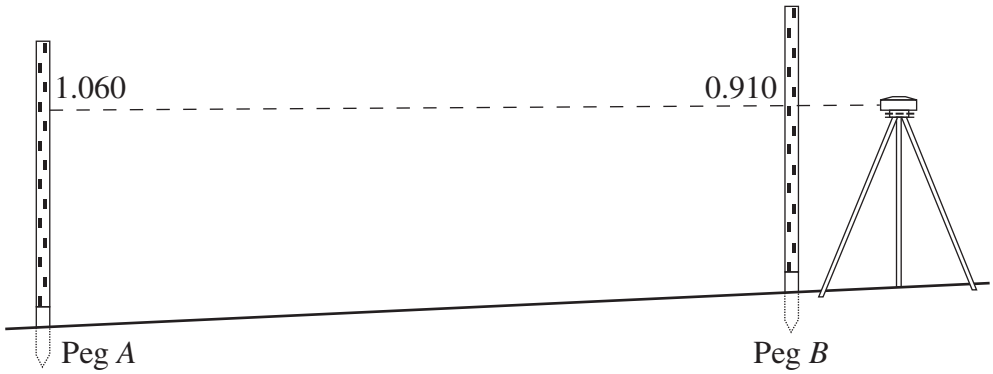
1 What is the height difference from Peg *A* to Peg *B*, taken from the staff reading?



(A) 0.15

(B) 1.50

(C) 1.970

(D) 150

2 What is the first action that a worker should take after the identification of a faulty power tool?

(A) Replace the faulty power tool

(B) Document the problem on the work sheet

(C) Verbally notify the foreman or site supervisor

(D) Replace the faulty component and carry out a routine maintenance service

3 Which of the following is an example of a mandatory sign?

(A)

White on green

(B)

Black on yellow

(C)

Blue background white symbol

(D)

Red circle and bar

4 What does risk management involve?

(A) The identification of hazards and the assessment of risk of work

(B) The identification of hazards, and the assessment and prioritisation of risks

(C) The identification of hazards, and the costing and risk analysis of the number of workers on-site at any one time

(D) The identification, planning and risk analysis of the equipment used to complete a particular task

5 How can a Gantt chart be used in the construction industry?

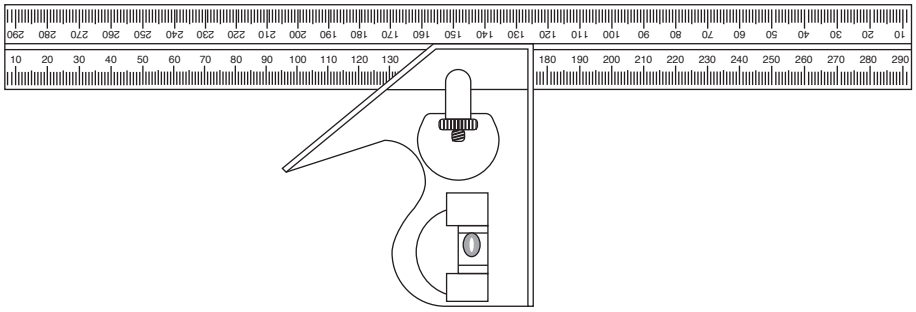
(A) To indicate safety regulations

(B) To identify the location of construction signs

(C) To identify the maintenance schedule of power tools

(D) To indicate the sequencing of major building activities

6 What is the name of the measuring tool shown?



Acknowledgement: © PCS Publications

(A) A set square

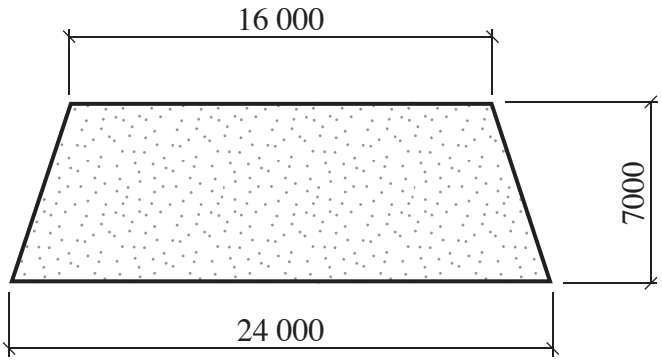
(B) A try square

(C) A builders square

(D) A combination square

7 The top view of a concrete slab is shown.

What is the area of the concrete slab?



(A) 1.344 m^2

(B) 140 m^2

(C) 154 m^2

(D) 168 m^2

8 What is the purpose of a wall plug?

(A) To prevent vibration when drilling

(B) To attach fixtures to hollow walls

(C) To use as a support when drilling into masonry

(D) To provide anchorage for lightweight fittings inserted into masonry

9 Why are countersunk wood screws used?

(A) To achieve a flush surface

(B) To maintain surface strength

(C) To prevent surface corrosion

(D) To prevent the surface from splitting

10 Which scale is most appropriate for a floor plan?

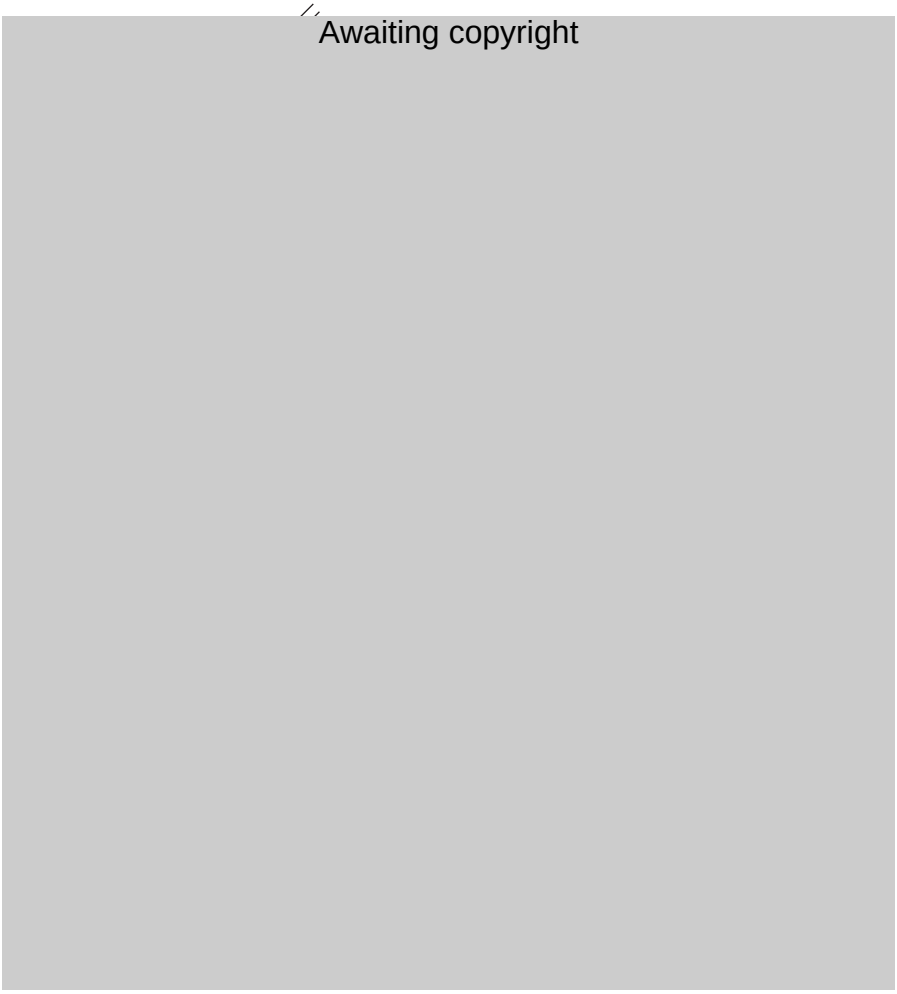
(A) 1 : 2

(B) 1 : 20

(C) 1 : 50

(D) 1 : 100

11 A section drawing is shown.



What are the components labelled *X* and *Y*?

	X	*Y*
(A)	Joist	Bearer
(B)	Skirting	Joist
(C)	Joist	Ant cap
(D)	Engaged pier	Joist

12 A scaled measurement of 372 mm has a true dimension of 9.3 metres.

What scale is being used?

(A) 1 : 20

(B) 1 : 25

(C) 1 : 50

(D) 1 : 62

13 The table shows a construction waste management plan.

Type of material	*Estimated volume* (m^3) *or area* (m^2)	*Reuse and recycle*		*Disposal waste only*
		On-site	*Off-site*	
Timber	10.4 m^2	✓		
Concrete	10.4 m^3		✓	
PVC tubing	10.4 m^3			✓
Plasterboard	10.4 m^2			✓

Which material has the greatest negative impact on the environment?

(A) Timber

(B) Concrete

(C) PVC tubing

(D) Plasterboard

14 What is the purpose of a construction work Code of Practice?

(A) To meet union regulations

(B) To meet industry standards

(C) To reduce workplace hazards and risks

(D) To comply with material safety data sheets (MSDS)

15 Electricity is required for a power tool and is to be taken from an on-site power pole. Portable electrical lead posts will be required to support the lead over a distance of 28 metres and will be set out 4 metres apart.

What is the cost to purchase the electrical lead posts, if each post costs $12.50?

(A) $87.50

(B) $100.00

(C) $112.50

(D) $187.50

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2013 HIGHER SCHOOL CERTIFICATE EXAMINATION

Construction

Centre Number

Student Number

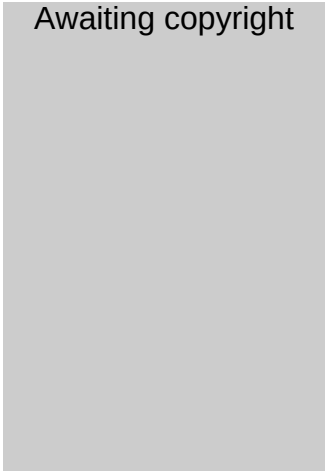
Section II

35 marks
Attempt Questions 16–21
Allow about 50 minutes for this section

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

Question 16 (3 marks)

(a) Name the hand-held power tool shown. **1**



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(b) Outline the safety procedure for using this power tool. **2**

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Question 17 (5 marks)

(a) Outline the work role of each of the following TWO construction personnel. **2**

- Project manager
- Quantity surveyor

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(b) Why is it important for members of a work team to understand their responsibilities and duties? **3**

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Construction

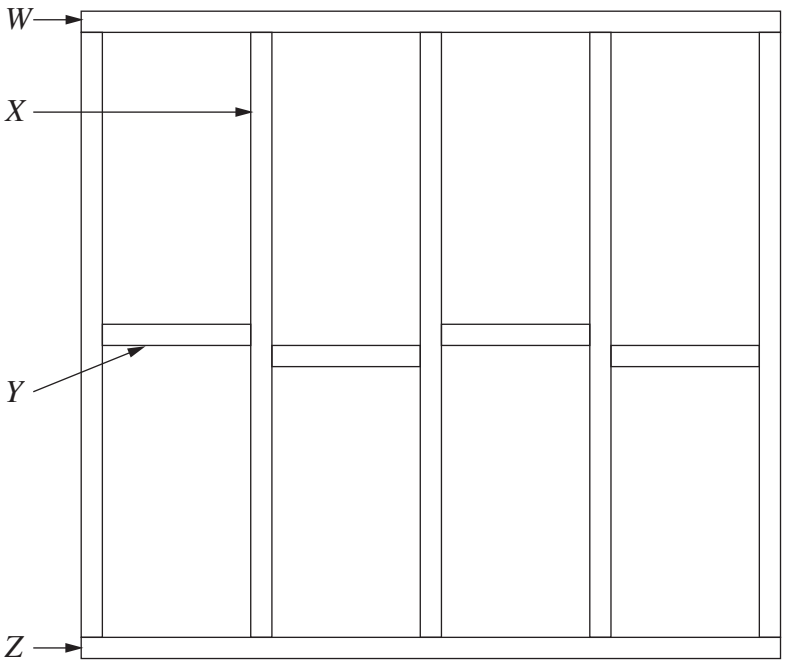
Centre Number

Section II (continued)

Student Number

Question 18 (3 marks)

(a) Name the labelled components in the timber frame shown. **2**



W .....

X .....

Y .....

Z .....

(b) Outline a method to test the timber frame for squareness. **1**

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Question 19 (6 marks)

Explain how a range of verbal and non-verbal communication strategies can lead to effective communication on a construction site. **6**

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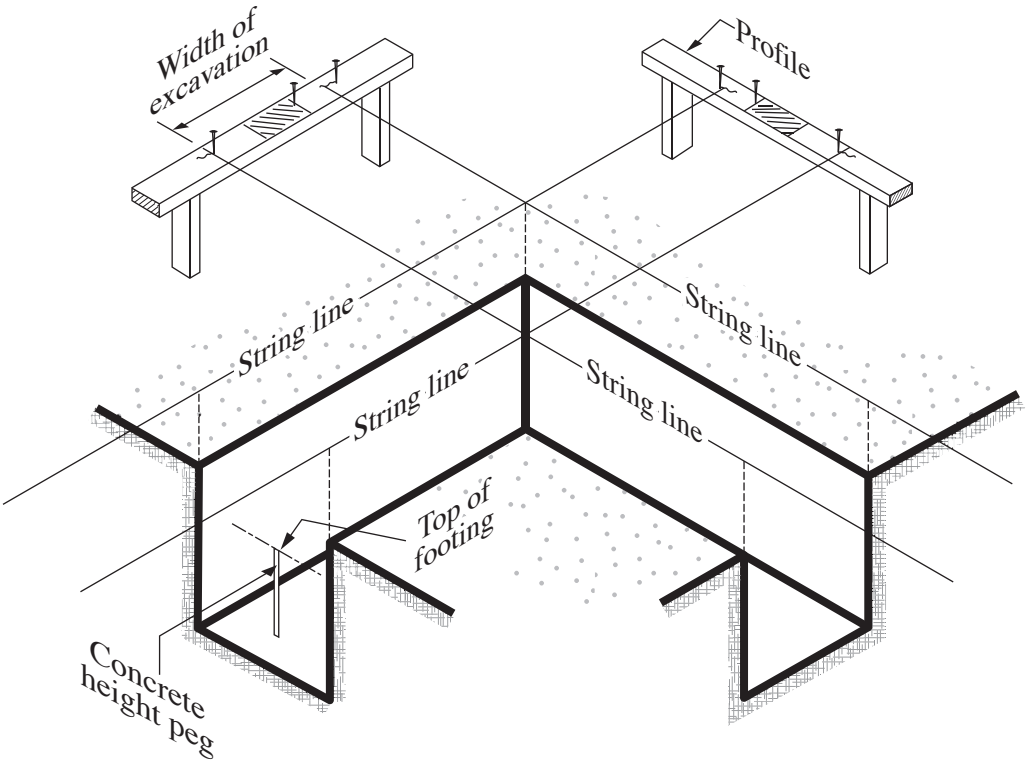
Question 20 (10 marks)

The diagram shows the setting out and excavation of a trench.



Acknowledgement: Practical Australian Carpentry Book 1 - Framing and Construction by Jack Barrington, Dieter Mylius and Stuart Arden © McGraw-Hill Education Australia, 2010

(a) Outline how a worker would ensure that the string line is level and the correct depth of the concrete height peg is achieved. **2**

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Question 20 continues on page 14

(b) What manual handling procedures should a worker follow in order to prevent muscular injuries when using hand tools to excavate the trench? **3**

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(c) Outline the process of setting out profiles and trench dimensions, and ensuring site safety of the excavation area. **5**

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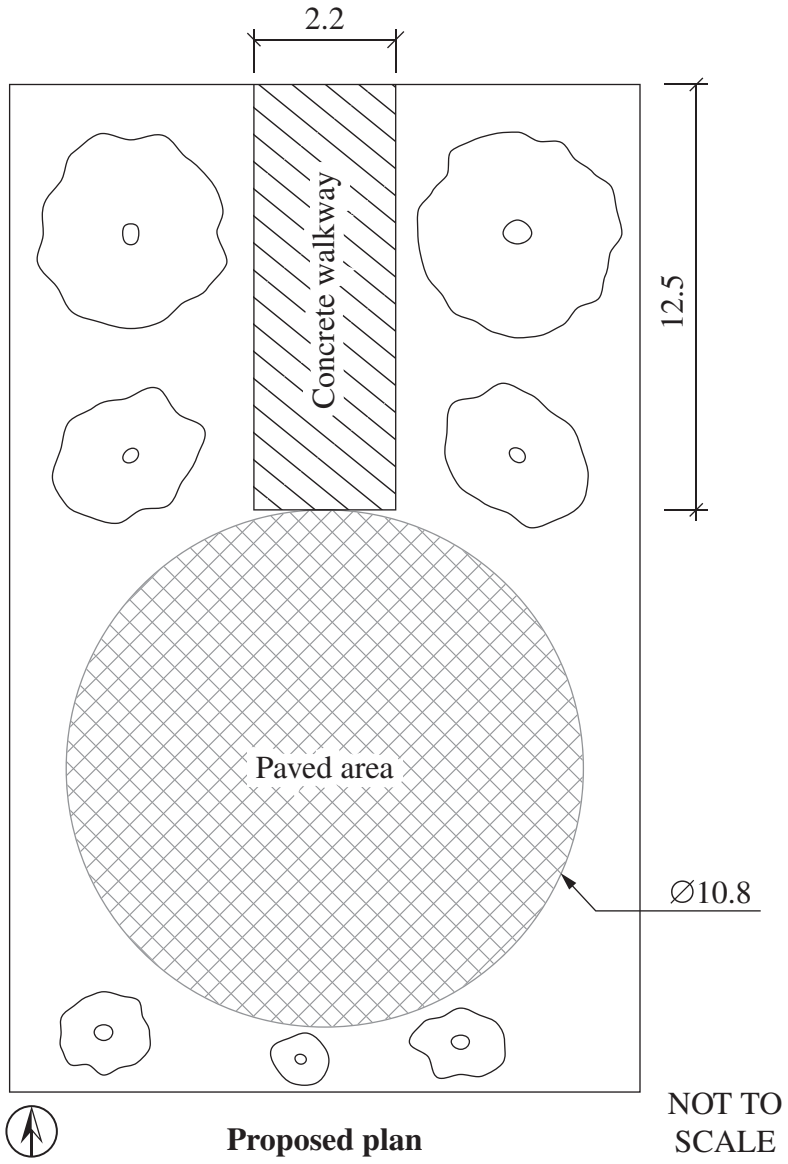
End of Question 20

Question 21 (8 marks)

Please turn over

Question 21 (8 marks)

The diagram shows a proposed plan drawing of a concrete walkway and a paved area.



Proposed plan

(a) Calculate the amount of concrete to be ordered to form a 75 mm thick walkway, allowing for 10% waste. Show all working. **2**

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Question 21 continues on page 17

Question 21 (continued)

(b) Using the formula $A = \pi r^2$, calculate the number of square metres of pavers required for the circular paved area, allowing for 15% waste. Show all working. **3**

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(c) Calculate the total cost of labour to construct the walkway and paved area and for site clean-up if the labour cost is $48.00 per hour. The work log is reproduced below. Show all working. **3**

Total labour and hours work log		
Component	*Number of workers*	*Hours per worker*
Walkway	4	16
Paved area	5	24
Site clean-up	3	3

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End of Question 21

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Construction

Section III

15 marks
Attempt Question 22
Allow about 25 minutes for this section

Answer the question in a writing booklet. Extra writing booklets are available.

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

- demonstrate knowledge and understanding relevant to the question
- communicate ideas and information using relevant workplace examples and industry terminology
- present a logical and cohesive response

Question 22 (15 marks)

Using examples, explain the benefits of using a work schedule in the construction industry.

Please turn over

Section IV

15 marks
Attempt Question 23
Allow about 25 minutes for this section

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

Question 23 (15 marks)

During an excavation on a construction site, a gas line explodes resulting in a number of workers being injured.

(a) Describe the emergency procedures to be followed in response to this critical incident. **3**

(b) What documentation and communication will be required by management after the immediate response to this critical incident? **4**

(c) Explain the risk management assessment process that should have been implemented to prevent the accident. **8**

End of paper